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CONCERNING

PAIN IN THE GROIN,

Delivered at the London Clinical School of Medicine (Seamen's Hospital), on Jan. 24th, 1907,

BY SIR WILLIAM BENNETT, K.C.V.O., F.R.C.S. ENG.,

CONSULTING SURGEON TO ST. GEORGE'S HOSPITAL; SENIOR SURGEON TO THE SEAMEN'S HOSPITAL, ETC.

GENTLEMEN,—Several years ago, by one of those coincidences which are not rare in practice, I was consulted within 48 hours by three patients solely on account of pain in the fold of the groin, without swelling, tenderness, or any other objective symptom within the immediate neighbourhood. Pain in the groin was the trouble complained of and pain in the groin was the only thing from which relief was sought. The cases proved interesting; they had already been treated by others without benefit and they served the useful purpose of leading me to investigate rather more carefully than, I believe, I had hitherto done cases in which the only cause for seeking advice was pain in the groin. I have now got together sufficient memoranda of cases of the same type which have since come under my notice and it is with this series that I propose to deal to-day. The cases had the following points in common. 1. Pain continuous or intermittent in the fold of the groin without swelling, tenderness, or any other sign of lesion near the seat of pain. 2. An impression on the part of the patient that the cause of the pain was above or below the groin, as the case may have been, without being able to locate it. On analysis, however, in a considerable number of the cases this impression was very vague and the patients were obliged to admit that they could not tell whether the incidence of the pain was from above or from below. The primary impression, however, proved, as a rule, to be correct. In the majority of the cases movements of the hip-joint, however free, whether passive or voluntary, had no effect upon the pain, but in some the pain was either produced or increased by extreme flexion or by forced extension. In no case was there any restriction in the normal movements of the hip-joint so far as the patient was aware. The table gives a general idea of the cases so far as diagnosis was practicable:—

54 Cases in which Pain in the Fold of the Groin was the only Symptom complained of. (Recent injuries are not included.)

Incidence of pain apparently from above.	Cases.	Incidence of pain apparently from below.	Cases.
Prolapse of the ovary ...	1	Small omental femoral hernia	1
Omental umbilical hernia	1	Small femoral hernial sac	1
Tumour of the pelvis ...	1	Obturator hernia	1
Malignant disease of the rectum	1	Saphenous varix	4
Stone in the bladder ...	1	Osteoma of the tibia ...	1
Stone in the ureter... ...	3	Femoral atheroma ...	2
Stricture of the urethra	2	Osteo-arthritis	1
Moveable kidney	1	Rider's sprain...	4
Cyst of the testicle... ...	2	Polypus of the rectum	2
Retained testicles	3	Piles	2
Intestinal diverticulum..	1	Flat foot	1
Incomplete inguinal hernia	2	Popliteal sarcoma... ...	1
Traumatic lumbar hernia	1	Old fractured tibia ...	2
Varicocele	3	Melanotic mole on the sole of the foot	1
Lateral curvature of the spine...	2	Varicocele...	2
Spinal abscess	1		
Undetermined	2		
Totals	28	... ...	26

The right groin was concerned more frequently than the left but I have no record of the exact proportion. The large majority of cases were in males; those in women did not exceed a dozen. The three patients who first attracted my attention had, as already stated, been variously treated without benefit; in one the cause of the pain was found to be an irritated, completely retained (abdominal) testis, in another there was a small omental femoral hernia, and in a third a stone in the ureter accounted for the solitary symptom. Although in a few of the cases the diagnosis was not absolutely certain, in the large majority it was undeniably accurate. In the course of the investigation of the cases it was clear that pain localised in a curiously limited area could be produced by conditions sometimes so remote that I confess I should have previously been sceptical as to the possibility of the causation.

A point of some interest, having regard to subsequent experience, was elicited whilst investigating the cases—viz., that in a minority only of the patients who had previously been under treatment had any careful examination of the gluteal and perineal region or of the lower limb below the middle of the thigh been made, although in all cases abdominal examination seemed to have been thorough—a capital example of the predominance of abdominal considerations in the minds of practitioners at the present time. A considerable number of the patients had undergone "cures" at continental and other watering places frequently upon the advice of friends and on the chance apparently of gout or rheumatism being at the bottom of their troubles. It is obviously in the time at our disposal as impossible as it is unnecessary to deal with all the cases tabulated. In some the relation of the groin pain to its causative disease is obvious; of the remainder, it is only possible to call your attention to the most interesting.

CASES IN WHICH THE INCIDENCE OF THE PAIN SEEMED TO THE PATIENT TO BE FROM ABOVE.

Small umbilical hernia.—A man, 33 years old, suffered from continual discomfort in the right groin, which sometimes during defæcation became acute, and was always intensified when the arms were extended about the head and in hyper-extension of the lower limbs. Nothing abnormal could be felt at the seat of pain and a careful search in all directions failed to detect anything unnatural excepting a minute omental protrusion by the side of the umbilicus. No connexion could at the time of this discovery be made out between the little hernia and the pain, but subsequently the patient became convinced in his own mind that the two were associated and the protruding lump was removed. No further pain in the groin was felt.

The case of *malignant disease of the rectum* was very instructive as no suspicion of its existence had previously arisen. The patient was a man, about 50 years of age, who complained merely of a continual aching pain in the right groin, which was always to some extent increased in the standing position; there was no tenderness or other sign of disease; the patient seemed in perfect health. A question about the action of his bowels led him to say that everything was natural but that occasionally he had noticed that the groin pain became rather acute during defæcation. A rectal examination revealed as high as the finger tip could reach a small hard nodule the touching of which increased the pain in the groin.

Stone of the bladder.—The patient was a man advanced in years, singularly hale and well preserved. The attacks of pain in the groin were acute and intermittent, the intervals between the attacks varying from hours to days; the left groin was concerned as a rule, but sometimes the right was affected; the attacks generally occurred upon rising from bed in the morning, and at times were so acute that he had to lie down again until they passed off. Nothing abnormal could be discovered. The urine was normal and the vesical functions were natural. Finally, an attack of pain of the usual kind was followed by acute retention of urine from impaction of a calculus in the urethra. This was passed spontaneously before surgical aid was forthcoming. No further attacks of the pain occurred. It is possible, of course, that the stone had previously been lying in the ureter, but the bladder seemed to be its more likely situation.

Stone in the ureter.—In these cases the left ureter was concerned in two, and the right in one. All the stones were diagnosed and located by the x rays. Three stones were present in one case; in the others the stone was single. The only symptoms complained of were continual pain and discomfort in the corresponding groin. Nothing abnormal could be seen or felt until the x rays showed the stones. There were no urinary symptoms of any kind. In two cases the stones were small and were finally passed, after which all pain disappeared. The third case was the following.

A man about 40 years old had suffered for years from a more

or less constant pain in the right groin; it was never acute and rarely entirely absent. As a rule, it was worse in the morning on leaving his bed and again towards evening. The patient thought it was a little increased when the bladder was full but he was rather vague on the subject. No objective signs of lesion could be made out. The bladder and bowel functions were normal excepting a rather hesitating act of micturition which he said was natural to him. The x rays showed a stone of considerable size at the extreme vesical end of the ureter. Removal of this by suprapubic cystotomy entirely relieved the groin pain. Apart from the question now under discussion these cases are particularly useful in showing the value of the x rays in vague pain and in demonstrating how greatly the actual symptoms sometimes caused by stone in the ureter differ from those described in books.

Stricture of the urethra.—In neither of these cases was stricture suspected. Pain in the groin was the only trouble. The most striking case was as follows. A man, aged 30 years, had suffered from continual aching pain in both groins for nearly two years. He had suffered from slight gonorrhœa when very young which was cured without complications. His symptoms had been regarded as rheumatic, the usual remedies having been used without benefit. In passing a sound in order to eliminate the remote possibility of a vesical cause for the pain a stricture was found in the usual situation which admitted a No. 7 bougie with slight difficulty. During the passage of the bougie through the stricture the pain in the groins became acute, especially on the left side. This, of course, gave the clue to the cause of the pain. Full dilatation of the stricture was followed by complete disappearance of the groin pain which had shown no sign of reappearance a year later. On passing a bougie through the stricture after an interval of three months from the time of full dilatation the pain in the left groin was temporarily reproduced, subsiding in a few hours.

In the cases of *retained testicles* the cause of the pain was self-evident when the condition of the testicles had been ascertained. It was, however, a remarkable fact that in two of the cases in which both testicles were in the abdomen and entirely impalpable, the scrotum being rudimentary, neither patient (both were grown men, one being married) had the least idea that he was the subject of any abnormality, a misapprehension which might have been accounted for by the abundantly developed penis which was present in each instance.

The *tumour of the pelvis* was discovered by the x rays. The pain was of the type under notice, but was somewhat increased by hyper-extension of the thigh. Nothing abnormal was perceptible to the touch. The growth was somewhat pedunculated and situated at the junction of the horizontal ramus of the pubic bone with the ilium on the right side. When discovered it had the appearance of an osteoma but subsequent events showed that it was sarcomatous.

The case in which a *Meckel's diverticulum* accounted for the pain was very interesting. The symptom which led to advice being sought was merely pain in the right groin which at times was acute and was always exaggerated by exercise. Nothing abnormal could be detected by the x rays or by any other means. Upon subsequent careful questioning it was, however, elicited that when the pain was excessive the patient invariably felt "blown up" and the abdomen became hard, walking being then only possible in a rather bent attitude. That this statement was correct was verified by observation. Constipation habitually existed but seemed to have no relation to the pain. (The only other case in the series in which somewhat similar symptoms occurred is the next following.) I thought in the present instance that some adhesions or, perhaps, a small omental hernia in the inguinal canal might have caused the trouble. The pain increased so much that radical measures became necessary with the result that a Meckel's diverticulum was found adherent by its apex and providing all the conditions for potential "strangulation by band"; it was divided and the symptom ceased.

The symptom again in the two cases of *irreducible incomplete inguinal hernia* was merely pain in the fold of the groin; in one, occurring in a man, no other symptom could be detected on palpation, but coughing caused a distinct increase in the pain, as did also lying on the opposite side of the body; when the pain was at its worst some abdominal distension was said to occur but it was not verified by observation. The symptom became so distressing that the patient begged for something to be done which might give relief. The lower end of the inguinal canal was therefore exposed by incision and on passing the finger up it, the internal ring was found to be blocked by a mass which proved to be an omental hernia. In the woman the symptom was less severe. An examination made whilst the patient was lying down revealed nothing abnormal but in the standing position there was sufficient fulness over the region of the canal to show that abnormality existed. She did not think it worth while to submit to operation.

The *spinal abscess* was interesting because it was one of those unassociated with spinal pain, tenderness, or rigidity. The only symptom complained of was pain in the groin. The movements of the hip were quite free but forcible extension of the thigh not only increased the pain in the groin but caused pain over the area supplied by the anterior crural nerve about the front aspect of the thigh. These symptoms, with much exaggerated knee-jerks, made the case pretty certainly one of very early psoas abscess, a diagnosis which was subsequently confirmed.

Two cases were quite *undiagnosable* so far as I am concerned, one being a very remarkable one. A healthy man approaching 50 years of age contracted what was at first thought to be influenza, the effects of which passed off in three or four days. Then, after an interval of 48 hours, rigors and high fever were followed by acute cystitis of a hæmorrhagic type. The necessary catheterisation was followed by acute epididymitis. Ultimately, after some weeks, he made what seemed to be a perfect recovery, but upon getting about his affairs as usual for three weeks or thereabouts he began to suffer from a deep-seated feeling of pain in the fold of the groin on the opposite side to that of the testicle which had been involved. There was no tenderness or other abnormality, only this perpetual feeling of deep pain. The bladder and rectum were quite normal; the seminal vesicles were not tender or large. This pain persisted for about 18 months without much alteration, there having been during that time three or four nocturnal emissions which consisted apparently of little more than blood in considerable amount. At the end of the time mentioned the pain began to increase without any other abnormal development until it became intolerable; nothing gave relief. Finally, the patient being in the country decided to come to London to see a surgeon and left his house in acute pain to drive to the station, a distance of four miles; before half the distance had been traversed the pain suddenly disappeared, leaving neither tenderness nor discomfort of any kind, and I understand that although five months have elapsed there has been no sign of recurrence. I am bound to admit that I do not know what the lesion was nor do I in any way understand the case.

CASES IN WHICH THE INCIDENCE OF THE PAIN SEEMED TO BE FROM BELOW.

The two cases in which the pain in the groin appeared to be due to some abnormal condition in the crural canal occurred in women. In the first, in which the fault proved to be a very small irreducible omental tag, no symptom other than pain in the groin fold could be elicited, but this was increased by coughing although no unnatural impulse was noticeable, and by forcible extension of the thigh. In the other case the pain was not increased by coughing or hyper-extension, but in the erect position there was a very slight fulness over the saphenal end of the canal which was non-existent on the opposite side. It was so slight that in ordinary circumstances it would probably have escaped notice, but being at the time much on the alert in cases of this kind it was sufficiently pronounced. The condition was found to be a minute empty hernial sac, having a very small opening into the abdomen; the pain was apparently due to accumulation of fluid in the sac as the day went on.

In another case I diagnosed an *obturator hernia* but no opportunity of verifying the diagnosis was offered. The patient was a woman who complained of pain immediately below Poupart's ligament occurring only occasionally, but when it occurred it was very acute. Nothing abnormal could be seen or felt nor was there any tenderness. On careful inquiry it transpired that coughing increased the pain and on occasions there had been a feeling of nausea which nearly ended in vomiting; moreover, if the pain continued for some hours it seemed to extend down the inner side of the thigh to the knee and it always disappeared suddenly, complete comfort immediately following. It had hitherto been thought to be a neurotic trouble, but I have no doubt that this impression was at all events wrong.

In the cases of groin pain in which marked *saphenous varix* was present the cause was obvious, the only noteworthy

thing being that the cause did not seem to have been previously recognised, probably, I fancy, because, judging from what the patients said, the only examination made had been in the recumbent position when, of course, the varices were not obtrusive. In the standing position they were very obvious. Three of the cases were operated upon with complete relief.

The *osteoma of the tibia* was a remarkable case. A man, aged 25 years, who came over from South Africa during the Boer War, complained of frequent attacks of extremely acute pain in the left groin rather to the inner side. The attacks appeared to occur only when the limb was being flexed whilst it was rotated outwards as, for an example, when he crossed the limb over the opposite thigh; on a few occasions it had occurred during some action, such as kicking; once it had been produced in a most acute form by accidentally knocking the leg against the step of a cab. In the groin there was absolutely nothing abnormal to be detected; there was no "click" or other sign of mechanical trouble in the hip-joint. He described the pain as giving him an impression of being "hit from below." Whilst examining the lower part of the leg for a possible, though unlikely, cause he cried out that I had started the pain, which was obvious from the expression of suffering in his face; the pain rapidly passed off and was reproduced by manipulation of the same part. Ultimately I found a small hard tumour which the x rays showed to be very spiky in shape (osteoma?) springing from the inner side of the tibia about four inches from its lower end; pressure upon this in certain positions of the limb always produced the pain. I suppose some filament of the saphenous nerve must have been involved. Arrangements were made for the removal of the offending lump, but something led to the patient postponing operation and I never saw him again.

In connexion with the above case the following is worthy of mention, although the pain was located over the knee, because it not only shows how remote the cause of a local pain may be, but how a well-recognised condition may be mimicked in a most unlikely way. A well-known London medical man had for some time suffered from sudden attacks of pain which he attributed to recurrent displacement of a semilunar cartilage in the knee. The attacks seized him suddenly, as a rule, whilst turning quickly round in walking or when walking upon uneven or sloping ground. So acute were the attacks that they "stopped" him for a few minutes and then rapidly disappeared. No effusion into the joint had been noticed and no positive mechanical "locking" had happened. Such arrest in the movements of the joint as had occurred seemed to be due solely to the acuteness of the pain. So crippling had the symptoms become that he consulted me with a view to consider the desirability of having the defective cartilage removed. Although the history related would fairly fit certain cases of knee-joint derangement I was rather sceptical about the existence of this because the knee appeared to be altogether normal, showing none of the signs of laxity or "wobbling" which, so far as I know, is always present in cases of recurrent attacks of derangement. Some further inquiries elicited the fact that the attacks of pain occurred only whilst boots or shoes were being worn—rather a suggestive fact seeing the frequency with which the attacks occurred. Following upon this an examination of the foot revealed a sensitive corn, pressure upon which produced an attack of pain like those described. Modification of boot pressure resulted in a disappearance of the deceptive symptoms of derangement of the knee-joint. This is an admirable case to demonstrate the soundness of what I am very fond of teaching—viz., that the true attitude of the diagnostician is that of a "detective," which is essentially one of suspicion even when things seem obvious. Had I been less wary and had I failed to appreciate the bearing of the evidence of the boot, which was, of course, the clue to the case, it is not unlikely that I might have seriously considered the question of exploration of the knee-joint. It would be exceedingly interesting if it were possible to ascertain the number of joints and other cavities which have been explored in search of faults of which they are entirely innocent.

A further excellent example of a remote cause for pain in the groin is afforded by the case of a *melanotic mole* in the sole of the foot. The patient, a woman of an admitted highly strung and neurotic type, complained of repeated attacks of acute pain in the groin whilst walking which occurred with distressing frequency. No explanation could be advanced for the oncoming of these attacks beyond the belief of the patient that she was gouty which had led her to seek relief at watering places without success. As to the reality of the pain there was no doubt it had none of the characteristics of "neurotic" pain as commonly met with. It always occurred when stepping in a certain way but she had no knowledge of any tender spot on the foot. The pain, however, which was felt upon the "front of the hip" could be avoided by walking as much as possible on the outer side of the foot. Upon examination there was found at the inner side of the sole a flat black mole of the size of a threepenny-piece, deep pressure upon which produced a pain in the groin similar to that sometimes felt in walking. Removal of the mole was followed by entire disappearance of the pain complained of.

Of a similar type was the case in which pain in the groin arose in connexion with *flat foot*. The patient was a boy 14 years old, and although the existence of the valgus was known it had received no attention as it had, so far as those concerned could tell, given rise to no inconvenience. The provision of an appropriate brace and the use of rational exercise rapidly improved the condition of the foot and were followed by the disappearance of the pain in the groin.

Of the two cases of old *fracture of the tibia*, one was the result of a gun-shot wound, the other being an oblique fracture below the middle of the tibia, the upper end of the lower fragment projecting inwards in a very exaggerated way. The pain in the groin in each case occurred when rapid flexion of the knee or hip took place; the same movement slowly and carefully performed caused no pain. In neither case did the patient connect the pain in any way with the old injury. The long saphenous nerve was, I suppose, in some way involved in the parts about the breaks. The removal of an irregular piece of bone which projected under the skin in the first case was followed by disappearance of the groin pain; in the other instance when the patient realised that the pain was probably associated with the old fracture he did not think it of sufficient importance to submit to any operation for its relief.

The cases of *polypus of the rectum* and of *piles* may be taken together. In each case the patient was led to seek advice solely on account of pain in the groin, a fact all the more remarkable because those who were suffering from piles knew of their existence but attached no importance to them, and, indeed, would not have mentioned their existence had they not been questioned on the subject; one patient had, in fact, been referred to me by a practitioner on account of the groin pain, no mention having been made of the existence of piles to him. The groin pain in all these cases was localised at a spot above the saphenous opening; it became worse as the day advanced and was increased by acute flexion of the thigh upon the abdomen. In the hæmorrhoidal cases the cause of the pain seemed obvious; in the others the polypi were discovered only upon examining the rectum on the remote chance of finding a reason for the trouble. In both of these cases, however, rectal discomfort had been felt and in one bleeding had occurred, but the symptoms were not thought of sufficient importance to merit notice. One case of each kind was operated upon with entire success; in the other cases the patients did not think the matter of sufficient importance to submit to the inconvenience of operation.

In the cases of *varicocele*, of which there were five, it was curious that in three the pain seemed to the patient to come from above, whilst in the remaining two it seemed to originate below the level of the pain area. Those in which the pain seemed to originate above were comparatively unnoticeable and were probably of the kind I have described elsewhere in which the most marked dilatation was high up in the inguinal canal.

The two cases of *testicular cysts* (encysted hydrocele of the testicle) are useful in showing how an entirely unsuspected congenital condition may cause trouble without attracting attention to the part at fault. These cysts situated close to the top of the testicle are very common, generally bilateral and quite painless unless by chance they receive some slight injury when they invariably cause discomfort, usually in the groin, which is often very persistent. In each of the two cases included in the table a slight injury to the scrotum had happened years before and had been forgotten; the cysts were of the size of a small cherry, tender on manipulation, after which the pain in the groin was much increased temporarily; both patients were unconscious of the existence of the cysts. In passing it is worth noting that the pain complained of in varicocele is not infrequently due to one of these cysts. I saw within the past 24 hours a case of apparently painful varicocele in which the discomfort was

clearly due to a cyst of this kind on the opposite side; the importance of such a condition in relation to operations for varicocele is obvious.

Although the remaining cases for the most part speak for themselves, some interesting point was associated with each, but your patience and the time at my disposal are alike exhausted.

Collectively this series is, I hope, instructive enough to warrant my having called your attention to it; at all events, it seems to me to justify the following deductions: 1. That pain in the groin as an isolated symptom may arise from causes either so remote or unlikely that their existence would at first sight seem hardly worth consideration. 2. That no examination in a case of pain in the groin can be effective unless it is made in the erect as well as in the horizontal position of the patient. 3. That distinctly localised pain in the presence of obvious organic disease of which the patient is aware may so assert itself as to lead to the gross condition being considered of little or no importance. 4. That the belief in a "functional" or "psychic" pain would be greatly diminished if in all cases of apparently unexplainable pain a more comprehensive search in a detective spirit were made for a cause than is sometimes done.

IDIOPATHIC CYANOSIS DUE TO SULPH-HÆMOGLOBINÆMIA:

(ENTEROGENOUS CYANOSIS).[1]

BY SAMUEL WEST, M.D. OXON., F.R.C.P. LOND.,
PHYSICIAN TO, AND LECTURER ON MEDICINE AT, ST. BARTHOLOMEW'S HOSPITAL;
AND
THOMAS WOOD CLARKE, M.D.

FOR our knowledge of the peculiar forms of cyanosis with which this paper deals we are indebted almost entirely to the work of a few observers in Holland. The first case was recorded by Stokvis of Rotterdam in 1902, under the title of "Autotoxic Enterogenous Cyanosis (Methæmoglobinæmia?)." He showed the presence of the methæmoglobin spectrum-band in the blood. He also found that the urine contained a substance which gave a red colour with hydrochloric and other acids and transformed oxyhæmoglobin into methæmoglobin. He referred the condition to absorption of a toxic substance, produced by putrefactive changes in the intestines. Talma of Utrecht in the same year reported three cases and showed that the methæmoglobin was intracorpuscular and not, as in cases of drug-poisoning, in the blood plasma. Van der Bergh of Rotterdam, in 1905, showed that Stokvis's substance in the urine was nitrites and a decomposition product of normal urine. He showed also that the band in his own patient's blood was not that of methæmoglobin, but corresponded with that of sulph-hæmoglobin. He referred to a simple means of distinguishing readily between the two by the addition to the blood of sulphide of ammonium.[2] This caused the immediate disappearance of the methæmoglobin band but not that of sulph-hæmoglobin. He concluded that the condition was due to H_2S absorbed from the intestines, but he was unable to show the presence of H_2S in the blood. He also isolated H_2S-forming organisms from the stools, but attached no value to it, as this could be easily done with normal stools. In the same paper he also recorded a case of methæmoglobinæmia and noted that this condition cleared up in from 24 to 48 hours upon a milk diet but returned in four hours after an ordinary meal. In his next paper he reported that after an operation for stricture of the rectum the patient who was the subject of the first case recovered completely. He also briefly described three other cases of sulph-hæmoglobinæmia, all associated with obstinate constipation and recovering completely when the constipation was cured. In two cases of methæmoglobinæmia also mentioned in the same paper he proved the presence of nitrites in the patient's blood. Douglas and Gibson in July, 1906, recorded a case of methæmoglobinæmia from whose blood they stated that they isolated the bacillus coli communis, and they entitled their paper "Microbic Cyanosis."

[1] A paper read at a meeting of the Royal Medical and Chirurgical Society on Jan. 22nd, 1907.

[2] This is an old test and is mentioned by MacMunn.

The following is the account of the present case. A female, aged 37 years, unmarried, was admitted into St. Bartholomew's Hospital for debility and cyanosis. Although extremely feeble she was able to walk into the ward. The most striking feature in the case was the colour of the skin, which was of a leaden hue, resembling in tint that of silver staining, which made her look when asleep as if she was moribund. The cyanosis was universal, well marked in the face, cheeks, lips, ears, and nose, and under the finger- and toe-nails. The tongue, too, showed the purple colour well. In all parts it was easy to demonstrate that the colour was due to the blood and not to the pigmentation, as pressure with the finger or by bending the nails showed the skin when emptied of blood to be of the normal yellow hue. The fingers were not clubbed. The pulse was regular, feeble, not rapid, and of low tension. The respirations were 20, regular, and quiet. Physical examination revealed nothing. The cardiac dulness was normal. There were no cardiac murmurs. The lungs expanded well, were of normal size, and neither they nor the mediastinum presented any abnormal physical signs. The abdomen was normal and the spleen was not enlarged. The urine had a specific gravity of 1015, contained neither albumin nor sugar, and was of the ordinary colour. The appetite was fair and digestion good; the bowels were habitually constipated, but were kept open daily with medicine. The patient slept well. The only objective sign about the patient, except her feebleness, was the cyanosis, and nothing had been discovered so far which would explain it. There was no sign of congenital morbus cordis or of emphysema. The absence of dyspnœa put out of court any pulmonary disease or mediastinal pressure.

A preliminary examination of the blood in the wards showed the number of red cells to be 4,800,000 per cubic millimetre, of the white 3800, while the hæmoglobin was 90 per cent. The case was therefore not one of polycythæmia, which was on general grounds unlikely because of the patient's pallor. To confirm the results another examination was made a few days later in the pathological laboratory by Dr. F. W. Andrewes, who reported the red blood cells to number 5,050,000 per cubic millimetre, the white cells 3400, and the hæmoglobin percentage to be 115. The differential count was normal—viz., polymorphonuclears 72 per cent., lymphocytes 24 per cent., large mononuclears 4 per cent., and eosinophiles none. The red cells were normal in size and shape and there were no nucleated red cells to be seen.

For a spectroscopic examination the patient was taken into the physiological laboratory and there, with the help of a strong arc light, a spectrum was obtained by Dr. J. S. Edkins through the web of the thumb. This showed what appeared to be the spectrum of methæmoglobin. Subsequent examination by Dr. W. Langdon Brown confirmed this, and the spectrum was easily demonstrated in the blood placed in a microscope cell, so as to obtain films of varying thickness, the two oxyhæmoglobin bands in the green being easily seen in thin films and the band in the red being best seen in a thicker one. By regulating the thickness of the film the three bands could be easily demonstrated in the same specimen.

The presence of methæmoglobin in the blood led to a more careful examination of the urine. Its colour, as stated, was not abnormal, and Dr. Hurtley and Dr. Garrod pronounced the methæmoglobin spectrum completely absent from it. Some blood was now drawn from the patient and centrifugalised, so as to separate the serum and cells. Spectroscopically the serum showed no trace of methæmoglobin bands, but they were distinct in the portion containing the red cells. So far, then, the case appeared to be one of intracorpuscular methæmoglobinæmia. Most of the cases of methæmoglobinæmia recorded have occurred as the result of the action of certain drugs—chlorate of potassium, nitrite of amyl, permanganate of potassium, phenacetin, antipyrin, sulphonal, veronal, trional, and others. Consequently the sisters and nurses were ordered to watch the patient and her friends closely, but nothing was discovered. The patient herself denied absolutely that she had ever taken any medicines except what the medical man had prescribed, and the medical attendant stated that except for occasional doses of bromide and iodide he had given nothing for a long time more than a tonic of iron with arsenic. As the patient lived in an isolated part of the country, from which the nearest druggist's shop was some miles away, drugs must have been sent by post if they were to reach her privately. No evidence, however, of the

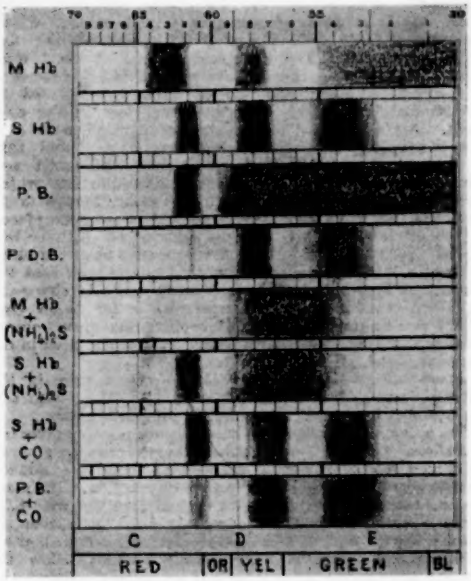
frequent receipt of letters or packets by the patient could be obtained either from the family or from the postman. So that all evidence of the obtaining and taking of drugs was lacking. During her stay in the hospital she certainly had no such drugs and her condition after some weeks was not materially changed. Drugs were therefore dismissed as the cause of the condition.

The following history of the case was furnished by Mr. H. F. Steele of Stoke-Ferry:—"The patient has been an invalid for ten years or more. She was very neurotic and suffered chiefly from neuralgia and sleeplessness, with dyspepsia and constipation, and, as a consequence, she became anæmic. Her first illness began in July, 1904, when she had a curious nervous attack with delirium and severe pain in the left side of the chest. Previously to this attack she had had bromide of potassium and chloral (30 grains of each) occasionally at night to relieve the pain in the chest and secure sleep. The attack came on suddenly without any apparent cause. There were no rise of temperature and no paralysis. She used to see objects (animals, &c.) in the room, and was at times semi-comatose, though she could always be roused. The attack was not alcoholic. She had for a time hypodermic injections of morphine frequently to give sleep, but after a time the morphine lost effect and was given up. She was ill for about two months and then gradually improved. When convalescent from this attack she was in much the same condition of health as before it. The present illness was of a different character altogether, and commenced in August, 1905, when she became cyanosed gradually and lost strength; the cyanosis at first was observed only during exertion, but gradually became persistent. The weakness slowly increased until she was quite unable to exert herself at all. She became an in-patient for a time in the Lynn Hospital, where the diagnosis, she says, was made of thoracic aneurysm. No drugs appeared to do any permanent good. Iron in various forms, as well as iodides, bromides, and arsenic, were all tried at different times. The only combination that seemed to benefit her at all was iron, digitalis, and strychnine."

In October, 1905, Dr. West saw her when happening to be making a visit in Norfolk. The cyanosis was considerable. She was so feeble and ill that it seemed unwise to disturb her by much examination, for she looked almost as if moribund. The visit was a casual and hurried one and no diagnosis could be made. She looked as if she would die shortly, and when Mr. Steele wrote a year later saying that she was still in exactly the same condition the case was evidently one of great interest and she was readily admitted into the hospital.

Dr. Wood Clarke now undertook to make some further examination of the urine and blood and succeeded in showing that what appeared to be the spectrum of methæmoglobin was not that of met- but of sulph-hæmoglobin, and that the case, therefore, was one of intracorpuscular sulph-hæmoglobinæmia. The following is Dr. Wood Clarke's account of his investigations. The laboratory investigations were directed to the blood, the urine, and the fæces. As cyanosis had been described in connexion with two different forms of hæmoglobin—viz., met- and sulph-hæmoglobin—a preliminary study of them seemed desirable before starting upon investigations into the present case. Accordingly a preparation of methæmoglobin was made by treating a few cubic centimetres of defibrinated ox-blood with potassium ferricyanide, and others of sulph-hæmoglobin by bubbling H_2S through portions of blood for a time or by adding a weak, watery solution of H_2S directly to them. Accurate spectroscopic examination of each was now made. Each showed a dark band in the red, but their positions were different. The methæmoglobin band extended from λ 620 to λ 645 on the scale, shading off to λ 615 on the one side to λ 650 on the other. The sulph-hæmoglobin band extended from λ 610 to λ 625 and in concentrated solution to λ 630. On Dec. 22nd, and again on the 29th, specimens of the patient's blood were obtained—on the first day from the finger-tip and on the second from a vein in the arm. A few drops were diluted with water and filtered. Each gave a definite band in the red, ranging in the one case from λ 613 to λ 629, in the other from λ 612 to λ 628. In both cases the band was faint, so that it was necessary to use a solution of such strength that the oxyhæmoglobin bands were blotted out. This made it clear that the patient's blood contained not met- but sulph-hæmoglobin. This was confirmed by the test referred to by van der Bergh, which consists in the addition to the blood of a little ammonium sulphide; in the case of methæmoglobin the band in the red disappeared immediately, while with sulph-hæmoglobin it persisted, and was indeed somewhat intensified; in both cases the oxyhæmoglobin bands slowly merged to form the band of reduced hæmoglobin.

During the course of the investigation it was noticed that the passage of CO through sulph-hæmoglobin solutions, provided the gas was free from acids, caused a definite change in the spectrum, all the bands being shifted slightly towards the violet end of the spectrum. The two oxyhæmoglobin bands are replaced by those of carbon-monoxide



MHb, Methæmoglobin. SHb, Sulph-hæmoglobin. P.B., Patient's blood. P.D.B., Patient's dilute blood.

hæmoglobin, while the band in the red changed from λ 610—λ 625 to λ 605—λ 620. This test was applied to the patient's blood and the typical change in the bands was noted. The passage of CO through methæmoglobin causes no change in the spectrum. Further investigations upon this property of sulph-hæmoglobin are at present being carried on in this laboratory.

An attempt was now made to ascertain if there were any free H_2S in the patient's blood. For this purpose a modification of the method used by van der Bergh was employed. Two wash-bottles were so connected with a suction pump that air could be passed through the solution they contained in series. In the first bottle was placed the solution to be tested for H_2S, and in the second some distilled water containing ammonia. After air had been drawn through the solution for ten minutes the ammonia solution was tested with sodium nitro-prusside. By this means as little as 0·0002 gramme of H_2S could be detected with ease from a watery solution, and it was found that in the ten minutes all the H_2S in the water in the first bottle had been carried over into the second. Five cubic centimetres of ox-blood were now taken; to it was added 0·0002 gramme of H_2S and the test repeated. The presence of free H_2S was easily proved, but the spectroscope showed no sulph-hæmoglobin band. To another five cubic centimetres of blood a much stronger solution of H_2S was added; the blood then showed the typical band and continued to do so after all free H_2S had been drawn off. This band was still distinct after the blood had been exposed (*a*) for 18 hours to the air and (*b*) for half an hour to CO. Some blood was now treated with H_2S and kept for some hours in a stoppered bottle. From this no H_2S could be obtained. Lastly, it was found that on the addition of a strong solution of H_2S to the blood the

sulph-hæmoglobin band did not appear immediately but only after standing for five minutes. The observations show that the combination of H_2S with hæmoglobin occurs rather slowly, that before the combination has taken place the free H_2S can be removed by a stream of air, but not afterwards. This test tried on the patient's blood gave negative results, from which it may be inferred that if there was any free H_2S at all in the blood, it must have been in extremely minute quantities.

It now seemed desirable to obtain some idea as to the quantity of H_2S required in order to form sulph-hæmoglobin in sufficient quantity to be detected by the spectroscope. A fresh aqueous solution of H_2S was therefore titrated and found to contain 2·856 grammes per litre; 10 cubic centimetres of this solution were repeatedly diluted by halving and replacing with water until a series of solutions was obtained, which represented from 0·01428 to 0·0003 gramme per five cubic centimetres. Ten cubic centimetres of blood were added to each tube, the mixture shaken and divided into two equal portions; one set of tubes was placed in the incubator at 37° C. and the other left in the cold room. After 24 hours the specimens of blood were examined with the spectroscope. It was then found that in the blood left in the cold room the band was not visible in the tubes of the fifth dilution, which represented 0·0009 H_2S, while it was clear, though faint, up to the last dilution in the tubes which had been placed in the incubator, representing a dilution of $\frac{1}{2}$$\frac{1}{2}$th or less than 0·00003 H_2S in the 10 cubic centimetres of mixed blood and water. From these experiments it will be seen that the amount of H_2S required to cause an appreciable change in the blood pigment at body temperature is far below that which can be detected by any chemical means, and consequently that it is no wonder it cannot be demonstrated in the patient's blood.

Blood culture.—Blood was taken from a vein in the patient's arm by Mr. R. C. Elmslie on Dec. 29th; with this various media were inoculated but no organism grew.

The urine.—The urine was carefully examined on several occasions. There was never either albumin or sugar present. Indol, by the colorimetric methods of Jaffe and Bouma, was decreased. Ferric chloride gave no reaction. The urine was acid when passed and gave a negative reaction with HCl. Nitrites were present as an extremely faint trace when the urine was acid and in considerable amounts when alkaline. The ethereal sulphates were greatly reduced below the normal, the ratio between these and the mineral sulphates on three separate days being 1:24, 1:35, and 1:26. The total sulphates were normal in quantity. An amyl alcohol extract after the addition of acetic acid showed that there was no increase of hæmatoporphyrin and only the faintest possible band of urobilin. No blood pigments were present. Benzoylation of a litre of fresh urine gave no precipitate.

The stools.—On Dec. 29th the patient was placed on the Adolf Schmidt test-diet for examination of the stools. At this time the constipation suddenly ceased, and under the influence of magnesium sulphate the stools became copious and watery. It seemed that during this period the cyanosis became less marked. The stool obtained, which probably also contained urine, was large and fluid, and had a decidedly offensive odour. It was slightly alkaline in reaction. On being rubbed in a mortar and examined on a black plate a few small shreds of connective tissue and mucus were found. Meat digestion was complete. On treating with Lugol's solution no undigested starch granules were to be found. The addition of 30 per cent. acetic acid and heat demonstrated that there was no excess of fat in the stools. No fatty acids were seen. A few grammes of stool placed in a Strassburger fermentation apparatus and left in an incubator at 37° C. did not develop an appreciable amount of gas in 48 hours. At the end of this time the reaction was about as strongly alkaline as at the beginning. Testing the stool after 48 hours with ammonia and sodium nitro-prusside only a slight pink colour was obtained, while the water in the collecting tube of the apparatus was quite free from H_2S. A second specimen of stools obtained on Jan. 5th was soft, dark green in colour, and of unpleasant odour. Microscopic examination showed the same findings as before, except for a few undigested starch granules. A faint trace of H_2S was proved after fermentation.

In the attempt to determine whether there were an increase in the sulphuretted-hydrogen-forming organisms in the patient's intestines the following method was used at the suggestion of Dr. Andrewes and under his direction. One gramme of solid stool was weighed in a sterile watch glass, thoroughly ground up in a sterile mortar, and washed into a flask containing 99 cubic centimetres of sterile water. This was then diluted decimally through ten flasks and one cubic centimetre of the fluid in each was added to a bouillon tube containing 0·5 per cent. lead acetate. The cultures were grown at 37° C. for 48 hours anaerobically and 48 hours aerobically. With one patient's stool blackening from lead sulphur appeared up to a dilution of 1:10,000,000—i.e., one cubic centimetre of the fluid contained 0·0000001 gramme of stool—while with four controls taken from other patients on the same diet and drugs it varied from 1:10,000 to 1:1,000,000,000. The experiments were too few to be conclusive, but they suggest that in this patient there was no increase of H_2S-forming organisms in the intestines at the time of the examination.

The accompanying table gives an analysis of 13 cases, eight of methæmoglobinæmia and five of sulph-hæmoglobinæmia. In the first four cases recorded of methæmoglobinæmia the exact nature of the condition is a little uncertain, as at that time the distinction between met- and sulph-hæmoglobinæmia was not recognised. Taking the two groups together, we find that eight of the patients were men and five were women, but of the five sulph-hæmoglobinæmic cases four were women and only one was a man. All the cases were adults except two, a boy, aged nine years, and a girl, aged 17 years. With these exceptions the ages ranged from 29 to 67.

The chief symptoms beside the cyanosis were headache and general weakness. The weakness was often extreme and in two cases was described as a "feeling of paralysis of the arms and legs." The cyanosis was general but especially conspicuous in the mucous membranes. There were no respiratory or cardiac symptoms other than the weakness would account for. Clubbing of the fingers was observed in two cases. The symptoms were usually of gradual onset, but occasionally developed very suddenly.

The duration of the cases varied from six months to eight years. Of six cases in which the result is recorded five got well and one died. In the fatal case the only lesions discovered at the necropsy were ulcerative enteritis and chronic parenchymatous nephritis.

The blood count is given in five cases. In four the red cells were 5,000,000 per cubic millimetre or slightly more, in one 3,360,000, so that in spite of the pallor there was no real anæmia; the white cells were 7900 per cubic millimetre in two cases, 10,000 in one, 20,000 in one, and 3400 in another. The hæmoglobin percentage was given in four cases as 90, 96, 70, and 115. The differential blood-count in one case was normal.

The urine showed the presence of albumin in three cases as a trace only except in the fatal case, in which chronic parenchymatous nephritis was found post mortem. Indol was in excess in four cases and in defect in two cases. The ethereal sulphates were increased in one case and diminished in one case. The pigments were not abnormal either in amount or nature.

Contrasting the two groups, it would appear that the methæmoglobin cases were associated with diarrhœa and improved greatly on a milk diet, while the sulph-hæmoglobin cases were associated with constipation and did not improve till this was relieved. In van der Bergh's first case of sulph-hæmoglobinæmia, that of a boy, aged nine years, the constipation depended on a rectal stricture which resulted from an operation for imperforate anus. A second operation, which relieved the stricture and constipation, was followed by recovery.

A SUMMARY OF PREVIOUS INVESTIGATIONS.

The first case recorded by Stokvis was that of a soldier who had been cyanotic for five years, the condition being associated with chronic diarrhœa. The patient died, but the necropsy showed only ulcerative enteritis and chronic parenchymatous nephritis. Spectroscopic examination of the patient's hand and tongue showed distinctly the band of methæmoglobin. As the action of drugs could be excluded, Stokvis concluded that the condition was due to intestinal absorption, and he turned his attention to the urine as the most likely source of information as to the etiology of the methæmoglobin-forming substance. On adding 1 cubic centimetre of defibrinated ox-blood to 25 cubic centimetres of the patient's urine he was able to obtain methæmoglobin

TABLE GIVING AN ANALYSIS OF 13 CASES—EIGHT OF METHÆMOGLOBINÆMIA AND FIVE OF SULPH-HÆMOGLOBINÆMIA.

Case	Author.	Sex.	Age.	Symptoms.	Duration of cyanosis.	Bowels.	Stools.	Blood.						Urine.				Result.
								Red cells.	White cells.	Per cent. Hb.	Spectrum.	Nitrites.	Cultures.	Albumin.	Indol.	Ethereal sulphates.	—	
1	Stokvis.	M.	53	Diarrhœa 6 years; sudden collapse, cyanosis, clubbed fingers, heart and lungs normal.	4 years.	Diarrhœa	Fluid, acid, odorous, flagellata	—	—	—	MHb*	—	—	+	—	++	Red with acids.	Died
2	Talma.	M.	41	Headache, dizziness, cyanosis, œdema, systolic murmur at apex, palpitation and dyspnœa, diarrhœa.	1 year.	,,	Fluid, odorous.	5,000,000	7900	80	MHb*	—	—	—	++	—	—	Unimproved.
3	,,	M.	29	Dysentery, cyanosis, swelling of glands, heart enlarged, sounds weak.	—	,,	—	—	—	—	MHb*	—	—	—	++	—	—	Cured.
4	,,	M.	30	Headache, weakness, cyanosis, backache, glands enlarged.	½ year.	Retention and diarrhœa	—	—	—	—	MHb*	—	—	—	++	—	—	—
5	Van der Bergh.	M.	9	Cyanosis, rectal stricture, urethro-rectal fistula, tympanites, clubbed fingers and toes, heart and lungs normal.	2 years.	Retention.	Fluid, alkaline, stinking.	5,200,000	23,000	—	SHb	—	—	—	++	—	—	Cured.
6	,,	M.	25	Sudden weakness, œdema, cyanosis, heart and lungs normal.	7 years.	Diarrhœa and retention.	Normal.	—	—	—	MHb	—	—	+	—	—	—	—
7	Van der Bergh and Gutterink.	F.	67	Exudative pleuritis, obstinate constipation.	—	Constipation.	—	—	—	—	SHb	—	—	—	—	—	—	Cured.
8	,,	F.	60	Post-apoplectic hemiplegia, constipation.	—	,,	—	—	—	—	SHb	—	—	—	—	—	—	,,
9	,,	F.	17	Retro-peritoneal tuberculosis, constipation.	—	,,	—	—	—	—	SHb	—	—	—	—	—	—	,,
10	,,	M.	51	Diarrhœa 4 years, headache, feeling of paralysis, collapse.	4 years.	Diarrhœa	Fluid, odorous, acid.	5,200,000	7900	96	MHb	+	—	+	—	—	—	—
11	,,	M.	31	Dysentery, headache, feeling of paralysis of legs and arms, cyanosis, heart and lungs normal.	8 years.	,,	Fluid, odour of butyric acid, anguillula stercoralis.	—	—	—	MHb	+	—	—	—	—	—	—
12	Gibson and Douglas.	F.	36	Weakness, headaches, cyanosis, diarrhœa.	3 years.	,,	Offensive, nitrites.	3,360,000	10,000	70	MHb	+	Bacillus coli communis.	Trace.	—	—	—	—
13	West and Clarke.	F.	37	Headache, weakness, cyanosis, constipation.	1½ years.	Constipation.	Offensive.	5,050,000	3400	115	SHb	—	Sterile.	—	—	—	—	—

* Cases 1, 2, 3, and 4 are entered as MHb cases, though the fact that sulph-hæmoglobinæmia had at that time not been described makes it possible that they were the latter condition.

REMARKS.—*Case 1:* Necropsy.—Ulcerative enteritis; chronic parenchymatous nephritis. *Case 5:* Operation on rectal stricture. *Case 6:* Condition cleared up temporarily on milk diet. *Cases 7, 8, and 9:* Cleared up as soon as the bowels were kept open. *Case 10:* Condition cleared up temporarily on milk diet. *Case 11:* Condition cleared up temporarily on milk diet. *Case 12:* Previous history of the use of aniline drug.

in ten minutes. He further found that the addition of hydrochloric, phosphoric, sulphuric, and nitric acids to the urine produced a deep red colour. These two reactions occurred only when the urine was alkaline. An examination of the ethereal and mineral sulphates showed that the former were greatly increased over the normal, the average ratio being 1 : 2·79. The amount of indican was in excess. From these findings he concluded that the substance in the urine which gave the red colour with acids was a product of intestinal putrefaction and was the toxic material which caused the change of oxyhæmoglobin to methæmoglobin in the blood. Repeated efforts to isolate this substance failed completely.

Talma's three cases of methæmoglobinæmic cyanosis were associated with long-standing diarrhœa. He added to our knowledge of the condition by proving that the methæmoglobin was in the blood corpuscles and not in the plasma, as is usually the case in drug poisoning. As in the urine of all his cases he found an increase of indol and skotal he accepted Stokvis's opinion as to the cause of the disease.

By Hijmans van der Bergh's researches considerable light was thrown on the subject. In his first paper he reports two cases. The first was that of a boy, aged nine years, who suffered from a rectal stricture and urethro-rectal fistula following on early operation for imperforate anus. After proving that the altered blood pigment was intracorpuscular he turned his attention to the urine. Referring to recent work of Steensma and older work of Schönbein and Röhmann, he showed that normal urine in the process of putrefaction gives off nitrites—powerful methæmoglobin-forming substances—and is turned red by the addition of strong hydrochloric acid, and that, furthermore, the addition of a small amount of sodium nitrite to a normal acid urine gives it the property of being turned red by acids. He therefore concluded that the substance which Stokvis put forward as the cause of the

disease was nitrites and as a normal constituent of putrefying urine could not be considered of pathological significance. Van der Bergh next turned his attention to the stools and found that one cubic centimetre added to ten cubic centimetres of oxyhæmoglobin solution produced a band in the red end of the spectrum in from 10 to 12 hours. He was, however, struck by the fact that this band was not quite the same as that formed by the action of the patient's urine on ox blood. Careful comparisons enabled him to ascertain that he was dealing with two definite spectra: the one showing a band in the red, the middle of which represented a wave length of λ631·3, was given either by a known solution of methæmoglobin or by the action of putrefying urine on ox-blood, and the other with a band centred at λ 617·8 or definitely more towards the blue end of the spectrum, was produced by the action of the patient's stool on ox-blood. The latter coincided exactly with the spectrum obtained from the blood of the patient. He therefore concluded that the substance in the patient's blood which gave the dark band in the red end of the spectrum was not methæmoglobin but some new substance, and he set about to discover what this might be. Having tried all known drugs which act on oxyhæmoglobin, he came to the conclusion that sulphuretted hydrogen was the only substance which could act on the blood so as to produce the spectrum which he had found in the blood of his patient. He therefore decided that the foreign substance in the blood was the so-called sulph-hæmoglobin studied by Hoppe-Seyler and Harnack, and he called his case "sulph-hæmoglobinæmia." Attempts to prove the presence of sulphuretted hydrogen in the blood of his case by chemical methods failed, but the author was able to show that if ammonium sulphide were added to methæmoglobin the two bands of oxyhæmoglobin were changed to the broad band of reduced hæmoglobin, and the band in the red immediately disappeared, while in the case of sulph-hæmoglobin, although the oxyhæmoglobin was reduced, the band in the red remained unaltered. He also isolated sulphuretted-hydrogen-forming organisms from the stools and by inoculation of ox-blood produced sulph-hæmoglobin. As this can also be done in normal stools it was not considered of great importance.

In van der Bergh's second case, which proved to be methæmoglobinæmia, he added but little to our knowledge of the condition except to find that on a strict milk diet the condition cleared up in 48 hours to return again within four hours after a full meal. In his second article, published in conjunction with A. Gutterink, he states that his first sulph-hæmoglobinæmia case recovered completely after an operation on the rectum which enabled a proper evacuation of the bowels. He also refers to three more cases of sulph-hæmoglobinæmia associated with obstinate constipation, in which the cyanosis and spectroscopic picture cleared up when the bowels were kept open. Two more cases of chronic diarrhœa showing the methæmoglobin band enabled the authors to prove the presence of nitrites in the patient's blood.

In Gibson and Douglas's case of methæmoglobinæmic cyanosis two loopfuls of diluted blood were inoculated into nutrient agar and the bacillus coli communis grown. These findings were not confirmed and the authors expressly state that they should not be taken as final. That they themselves put some weight upon them is shown by the title they gave to their article—viz., "Microbic Cyanosis."

General Remarks and Conclusions.

A review of the facts observed in connexion with this case shows that the cyanosis is due to a change in the blood pigment, which in every way corresponds to the sulph-hæmoglobin of Hoppe-Seyler and Harnack. The case therefore belongs to the class described by van der Bergh as sulph-hæmoglobinæmia.

The causes of this condition are far from clear. In this case a specific microbic infection of the blood seems hardly probable from the duration of the illness and the negative results of the blood culture. Increased formation of sulphuretted hydrogen in the intestines seems not likely to be the sole cause, considering the frequency with which this gas occurs in the normal intestine. In this case in the stools, after 48 hours' incubation, not enough H_2S gas was generated to show more than a trace in the fermentation apparatus, and the urinary findings usually associated with intestinal putrefaction were lacking. It is possible that the cause may lie more in the intestinal walls than in their contents and that the error may be a hyperabsorption of H_2S rather than a hyperformation. Still another hypothesis which should be mentioned on purely theoretical grounds is brought to our minds by the old work of Claude Bernard and Hoppe-Seyler and the more recent investigations of Harnack. Bernard found that sulphuretted hydrogen given to animals intravenously was much less toxic than when given by the arteries, and the two latter authors have shown that H_2S will not combine with blood saturated with CO_2, that CO_2 acts so as to protect the blood from the attack of the H_2S. It may therefore be possible that the defect is one which prevents the H_2S from being excreted by the lungs and enables it to pass over from the venous blood where, owing to the excess of CO_2, it is a more or less inert substance, and to enter the arterial system, where, finding oxyhæmoglobin with no protecting CO_2, it can attack it with toxic force.

Some authors hold that what has been described as sulph-hæmoglobin is not a definite chemical compound formed by the combination of sulphur and hæmoglobin, but some intermediate product of the destruction of oxyhæmoglobin by sulphuretted hydrogen. Whether this be so or not is immaterial from a clinical point of view, for the occurrence of sulph-hæmoglobin in the patient must be taken, as far as we at present know, as evidence of the action of H_2S upon her blood. The point of chief clinical interest, then, becomes the source of the sulphuretted hydrogen, and, if in the intestines, the explanation of its toxicity to one patient and not to another. On this question we have been able to throw no light, but we trust that as the condition becomes more widely recognised further investigation will solve the problem.

The chemical investigations have been carried out in the laboratory of chemical pathology at St. Bartholomew's Hospital and we express our sincere thanks to Dr. Garrod and to Dr. Hurtley for their coöperation and help, as well as to Dr. Andrewes, Dr. Simpson, and many others who have shown their interest in the subject by their willing assistance.

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THE CAUSATION AND TREATMENT OF SOME HEADACHES.[1]

BY WILFRED HARRIS, M.D. CANTAB., F.R.C.P. LOND.,
PHYSICIAN TO OUT-PATIENTS, ST. MARY'S HOSPITAL, AND TO THE HOSPITAL FOR EPILEPSY AND PARALYSIS, MAIDA VALE.

THE symptom of headache is such a common one that I feel some apology is needed for my making the causation and treatment of some headaches the subject of my paper this evening. It is, however, on account of headache being so common and at the same time so obscure and complex in its origin that I consider the subject one of real importance.

The varieties of headache which I offer for your consideration are the paroxysmal and periodic headaches and those dependent upon some form of toxæmia. Many periodic headaches are of the form known as true migraine, an hereditary neurosis, probably dependent upon some paroxysmal vasomotor derangement. The sufferers from true migraine, more commonly women, very often belong to families the majority of whose members are predestined to some form of neurosis, which may take the shape of epilepsy, hysteria, asthma, vasomotor angina, or migraine. The statement has frequently been made that migraine is particularly common in individuals of exceptional ability and genius. This has not been my experience in practice, for large numbers of my hospital cases have been sufferers, the majority of whom were perhaps of rather less than average intelligence and a great many much below it. Migrainous headaches in their most typical form are unilateral, spreading over one half of the head and

[1] A paper read before the Harveian Society on Nov. 8th, 1906.

are often preceded for 10 or 20 minutes by some interference with vision. This in many cases amounts to no more than a sudden diminution of visual acuity, with a sensation of blackness or dancing specks before the eyes. Others have a more fully developed visual spectrum with partial blindness to one side, with the well-known fortification spectrum in the blind field. In others, again, there may occur a sudden hemianopia, a complete blindness to one side, so that the patient sees only half of the object directly looked at, so that if he looks into a mirror he can see only one half of his face. In a few patients there may be noticed also tingling of the fingers and of one side of the face, with perhaps aphasia, lasting for a few minutes. The usual course of these headaches is well known, lasting usually during the whole of the day, prostrating the patient completely, until vomiting brings relief. The cessation of the headache is probably not dependent directly upon the vomiting, for in a certain number of cases vomiting occurs quite early after the commencement of the headache and may be repeated several times, with no amelioration of the headache until many hours after. On the other hand, the vomiting in migraine is more probably the result of the headache, inasmuch as both are the result of increased intracranial pressure due to the vascular engorgement. When the headache has already lasted several hours and the vaso-motor derangement is beginning to subside, then the act of vomiting does no doubt contribute towards the cessation of the headache, on account of the powerful effect that vomiting produces of general vaso-dilatation, thus relieving the cerebral arterial pressure.

True migrainous headaches very commonly commence in early childhood and last until well past middle life, recurring at varying intervals, but usually diminishing in severity as the years pass. If gout, tuberculosis, or other cause of frequent pyrexia supervene, the headaches as a rule disappear. Probably the beneficial action of a seton in the back of the neck, an old remedy which often gave very good results, is due to the slight amount of chronic suppuration and consequent pyrexia that it produces. If the sick headaches increase in severity and frequency in middle age probably there is present some additional factor, as chronic Bright's disease or arterio-sclerosis, which is very prone to develop insidiously and aggravate a symptom, such as periodic headache, that is already present.

Migrainous attacks often come on without any previous warning, just as epileptic attacks so often do, the patient being apparently in his usual health or even conscious of an excessive sense of well-being. The attacks are, moreover, frequently precipitated by the same causes that are liable to bring on a fit in an epileptic subject—viz., great excitement, late hours, a crowded room, a bout of drinking, or, in women, the menstrual period. Constipation is by no means always present, and the tongue is often clean at the commencement of the attack, and there is no reason to ascribe this class of case to a toxæmia of intestinal origin. Very occasionally there may be loss of consciousness, or, more commonly, the sufferer from migraine has a typical epileptic fit. More rarely cases are met with in which epileptic fits are regularly preceded by a hemianopic scotoma or visual spectrum indistinguishable from that met with in migraine. Rarest of all are epileptic attacks which are followed by hemianopia, which is transitory and clears up entirely in 24 hours. Such varied forms of transitory cerebral disorder show clearly that migraine and epilepsy are closely allied, and that the same pathological process is probably concerned in the production of both. If the periodic headaches are of frequent recurrence, they are treated best between the attacks with bromides on the same lines as a case of epilepsy would be treated. Perhaps the three bromides of ammonium, sodium, and potassium answer somewhat better than potassium or sodium bromide alone. The actual headache is often relieved best, if taken sufficiently early, by a stiff dose of butyl chloral hydrate and phenazone, but if it is not given quite early in the headache, or preferably during the preliminary stage of scintillating scotoma, the dose is likely to lie in the stomach unabsorbed, perhaps for hours, and finally to be vomited unchanged. Another drug that may often bring almost immediate relief is nitro-glycerine, which by its vaso-dilator effect lowers the blood pressure in the peripheral vessels and so reduces the cerebral arterial pressure. This effect of vaso-dilatation in true migraine is of some help in understanding the pathology of the condition. Probably what takes place is an initial vaso-motor spasm affecting more particularly the territory of one posterior cerebral artery. During this stage the visual phenomena are produced by anæmia of the half-vision centre in the occipital lobe. The primary stage of arterial spasm is succeeded by vascular engorgement, thus directly producing the headache which, like the vaso-motor disorder, is often unilateral. In a few cases the primary spasm is very slowly relaxed, with no succeeding state of engorgement, as in a case I have now under observation of a woman, aged 35 years, who has for many years been subject to attacks of temporary blindness lasting one or more hours, the sight gradually returning, and as a rule little or no headache following. This theory of a primary spasm of the arterial supply in the region of the half-vision centre in the occipital lobe is strongly supported by the following case. A young woman who for many years had been subject to infrequent attacks of migraine, after one attack developed hemianopia. In this case no doubt, the primary spasm precipitated a thrombosis in the branch of the posterior cerebral artery supplying the half-vision centre in the calcarine cortex of one side. Hers was a family type of migraine, her brother occasionally suffering with very severe attacks. Another woman, a hospital out-patient, aged 48 years had been subject to severe periodic headaches from early childhood recurring about once a fortnight, and followed by sickness and disorder of vision. These recurrent attacks became less frequent after she reached the age of 30 years, occurring after that only once in six months until five years ago when she was operated on for enlarged glands of the neck. Since that time the attacks completely ceased, but three years ago she had a stroke followed by slight left hemiplegia. Six months later she had a slight fit with twitching of the right side of the face without loss of consciousness, but right hemianopia developed, which has remained permanent. These two strokes were undoubtedly thrombotic and are additional evidence of the liability to vascular derangements in the region of the calcarine cortex in these cases. Her visual symptoms in the migrainous attacks were not, however, hemianopic, but merely progressive disturbance of vision to the point of complete inability to distinguish objects, increasing with the continuance of the headache up to the period of vomiting. This is a not uncommon form of visual disturbance to meet with in that form of migraine which does not begin with the characteristic hemianopia or scintillating scotoma.

Next I wish to refer to periodic headaches which may resemble true migraine somewhat closely and yet are less dependent upon an hereditary neurosis and paroxysmal vaso-motor spasm than upon some peripheral cause which by its local irritant effects may set up reflexly a migrainous attack. These cases, pathologically speaking, would be strictly analogous to reflex epilepsy, such as convulsions dependent upon the peripheral irritation of worms, the irritation of a scar, &c. They are, of course, more likely to occur in patients with a neurotic family history, but the point I wish to make is that although the attack of migraine resembles true migraine, yet the peripheral cause in these cases is the most important element in their causation, and the removal of this may be followed by complete cure of the periodic headaches. A typical example of this form is ophthalmoplegic migraine, sometimes known as recurrent third-nerve paralysis. In this disease the third cranial nerve on one side has been damaged in some way, as by a small hæmorrhage from a severe blow on the head or fall in infancy, leaving behind a patch of meningeal thickening. At intervals the patient is attacked by severe headache which lasts for a day or two, and at the same time the third nerve becomes completely paralysed, though it recovers slowly during the succeeding weeks. This type rarely, if ever, develops a visual spectrum, which is a much rarer symptom in reflex than in hereditary migraine. Typical periodic headache resembling migraine I have known to follow an injury to the skull, causing a fracture of the base. The man recovered apparently from his injury but became subject to fortnightly headaches which prostrated him for the whole day. A year later he died from cerebral abscess. Other peripheral causes that not uncommonly give rise to this type of periodic headache are visceral lesions, such as chronic appendicitis, gall-stones, chronic gastric and other intestinal derangements. The onset of the menstrual period, too, in women is a frequent determining cause of reflex headache, especially if there be any chronic uterine disorder. The following case is interesting

on account of its suggestive analogy between reflex epilepsy and a reflex migraine. A boy, aged 14 years, had numerous convulsions in infancy; at the age of two years he was deeply jaundiced and ever since that time has been subject to recurring "bilious attacks." These occur every two or three weeks and commence with pain round the right side, being followed by severe headache which completely prostrates him for several hours, the attacks ending with vomiting. Occasionally in the course of an attack he becomes convulsed, with complete loss of consciousness—that is to say, an epileptic fit sometimes alternates with a migrainous headache, whereas the preliminary aura of pain round the right side and the history of the case dating from jaundice at the age of two years suggest that the attacks are of the reflex type and are perhaps dependent in part upon some lesion in the neighbourhood of the liver acquired at that early age, such as adhesions around the gall-bladder. The case is now under observation and the question as to the possible relief of the symptoms by an exploratory laparotomy in the region of the right hypochondrium is being considered.

The assertion has been made by some ophthalmic surgeons and others that the large majority of, if not all, migraines are due to errors of refraction, and that the sole remedy necessary which will provide an infallible cure is a pair of proper spectacles. This is a most pernicious way of explaining the condition because of its apparent simplicity and because of its striking success in a certain proportion of cases. Ocular headache, in which the pain is usually situate over one or both eyebrows and is due to errors of refraction, especially astigmatism, is not uncommon. Every now and then the pain may be more periodic in some patients and may exhibit the course of symptoms familiar to us as migraine. In these cases we have to do with a reflex migraine the peripheral exciting cause of which is the visual defect and constant unequal strain upon the ciliary muscle, and these patients will probably get much relief from proper correcting glasses. I have recently had under treatment a medical student for severe migraine, preceded by scintillating scotoma, whose first attack occurred two years ago while recovering from ulceration of both cornea. In this case undoubtedly the peripheral exciting cause was the astigmatism produced by the scarring of the ulcers on the cornea. For several weeks the attacks were frequent and severe, but they have now practically disappeared with the improvement in his vision.

After what I have previously said on the subject of hereditary and reflex migraine it would be manifestly absurd to ascribe all migrainous headaches to errors of refraction and the lack of proper correcting glasses. This is only one of the many peripheral organic defects which may reflexly induce the attacks. The reflex migraines differ from the true hereditary migraine in that they may start later in life, being dependent upon a peripheral cause in large part which is not hereditary. I have, however, known this form which had been present from early childhood disappear after a diseased appendix had been removed. The treatment of these reflex headaches is, therefore, obviously to remove if possible the peripheral irritant cause, whereas phenacetin and other analgesic powders are mere attempts at palliation of the periodic symptoms.

Constipation is an extremely common cause of headache and though it may accompany migraine and may even determine its onset it is one of the less frequent causes of periodic headache resembling migraine, but rather of toxæmic headache, which is more constant, often daily in its occurrence. A very definite type of recurrent toxæmic headache, which may easily be mistaken for migraine, is that associated with sluggish liver and habitual constipation. The pain in the head, as in migraine, is extremely severe, prostrating the patient completely for about 24 hours, and the tendency to these headaches may run in families, increasing the liability to confusion with migraine; but they differ from this neurosis in the following important particulars. There is no evidence of neuroses in the family; the periodic headaches get worse in middle life instead of better; there is no preliminary visual spectrum, though the patient may complain of a certain amount of dimness of vision; there is the close association of the headaches with constipation, furred tongue, foul breath, sallow skin and conjunctivæ, while the headaches may be warded off by a cholagogue and saline aperients and are not influenced by phenazone, phenacetin, bromides, or the usual headache powders. There is no arterio-sclerotic factor in this type of headache, the pulse remaining quite soft, and there is no albuminuria. The sluggish liver action and the constipation are the key to the treatment, yet there is a curious cycle of symptoms. The headache will pass off in about 24 hours or so, even though the bowels be not relieved, and the patient then feels quite bright and clear-headed. After one or two days a slight dull frontal headache returns, especially in the morning, and after an interval varying in different persons, but often fairly constant for the same individual, the severe headache recurs. This recurrent cycle of symptoms ending in the explosion of headache is apparently due in large part to a functional disturbance of the liver, the periodicity of the symptoms suggesting some derangement of its nervous control.

Toxæmic headaches are due to a circulating blood poison which may be introduced into the blood from without, such as alcohol, lead, iron, or ether, or the poison may be manufactured within the body either as the result of some acute microbic infection as pneumonia, typhoid fever, influenza, or small-pox, or as the result of some chronic morbid process as chronic gastritis, chronic Bright's disease, gout, diabetes, or cirrhosis of the liver. Gout and arterio-sclerosis are both very common causes of chronic headache, the high arterial tension in the latter being a most important contributory cause. The headache in arterio-sclerosis may be most persistent and resistant to ordinary treatment, though it may at once yield to nitroglycerine or one of the other nitrites, through the resulting lowering of blood pressure. In chronic Bright's disease, especially the contracted granular variety with hard arteries, the headache is equally severe and persistent, in part due to the high blood pressure and partly due to a toxæmia secondary to the kidney disease. Indeed, there are only two other causes of headache so severe and persistent as that of chronic Bright's disease with arterio-sclerosis—namely, cerebral tumour and cerebral syphilis. The headache associated with gout is not always associated with high arterial tension, but is often due to a toxæmia dependent upon a faulty metabolism and appears to be caused by the circulation in the blood of purins and other uric acid antecedents derived from a diet containing an excess of these bodies. These uric acid antecedents are chiefly derived from an excessive meaty diet, though they are also contained in tea and coffee. For persons, especially those of sedentary habits, with large appetites who are complaining of frequent morning headache it will be well in certain cases to insist on a rigid purin-free diet of milk, eggs, cheese, butter, cream, bread, nuts, macaroni, potatoes, and green vegetables. Such patients should drink a small tumblerful of some good laxative saline, taken hot the last thing before going to bed. With a weekly dose of calomel or blue pill and a short walk before breakfast every morning relief may often thus be obtained from the persistent distracting pain at the top and back of the head which, in men over 40 years of age, is frequently the result of long-continued excess of proteid constituents in the diet. It is possible that excess of the other constituents of food besides proteid—namely, the fats and carbohydrates—may, as Hare has suggested, be responsible for a similar process of toxæmia, which he has named "hyperpyræmia." Thus excess of all forms of food, not only proteid but fats and carbohydrates also, is likely to lead to overloading of the liver, and finally of the excretory organs, the kidneys. The postulate that the large majority of people habitually eat too much may be taken as in a fair way of being proved, since the researches of Chittenden on metabolism and the calorific values of diet, on the lines preached by Fletcher, have shown that the average individual can maintain perfect health and strength, while doing fair muscular work, on a diet the calorific value of which is not more than from one-half to two-thirds of that usually accepted as the irreducible minimum. Lastly, the effect of an open-air life has scarcely received sufficient prominence in the treatment of many forms of toxæmic headache. Persons who are subject to chronic headaches should cultivate the habit of keeping their windows widely open, and the hardening process thus slowly applied will not only render the individual far less susceptible to catching ordinary colds but his tendency to frequent headaches will often completely disappear, and from a listless valetudinarian with always something wrong with him he will become brisk and healthy in mind and body.

Wimpole-street, W.

ON OPSONINS AND THE OPSONIC INDEX AND THEIR PRACTICAL VALUE IN THE TREATMENT OF DISEASE,

ESPECIALLY WITH REGARD TO PULMONARY TUBERCULOSIS IN SANATORIUM PATIENTS.[1]

BY GEORGE A. CRACE-CALVERT, M.B. LOND.,
PHYSICIAN TO THE VALE OF CLWYD SANATORIUM, RUTHIN, NORTH WALES.

THE human body is subject to infection by the micro-organisms of many diseases, but of the multitude of organisms which affect man there is scarcely one which is more common than the tubercle bacillus, and because my work brings me almost solely into contact with patients suffering from pulmonary tuberculosis I propose to base my remarks chiefly on work that has been done in connexion with the tubercle bacillus and on the efforts that have been, and are being, made to combat its ravages.

As is well known, tuberculosis may be acute or chronic, and I use these terms rather than "general" or "local," because though general tuberculosis is practically always acute, yet local tuberculosis may be acute (as tuberculous meningitis, &c.), or it may be chronic (as in ordinary pulmonary tuberculosis, tuberculous glands, &c.). Now, in all the common general infections the disease, as a rule, only lasts a short time and if the patient's strength can be maintained for this short time recovery takes place, because the presence of the toxins in the blood leads to the corresponding formation of antitoxins which are incompatable with the life of the infecting microbe. If, however, the patient's strength cannot be maintained we believe that there is not time for a sufficient production of antitoxins to neutralise the toxins and so death ensues. In the local infections, however, the disease as a rule lasts a long time for, owing to the circumstances of the case, there is only a small production of toxins with a corresponding small absorption into the blood and hence there is only a limited production of antitoxins because the blood and tissues are not stimulated to produce them. It follows then that in the treatment of acute or general infections we must adopt chiefly the expectant attitude and maintain the patient's strength and trust that the infected organism may be able to produce sufficient antitoxins to neutralise the toxins, though in a few cases—e.g., diphtheria and septicæmia—we can produce the antitoxins externally to the organism and by inoculating them into the patient increase his available resources for fighting the disease. In the treatment of the chronic or local infections, however, we must stimulate the organism to produce its own antitoxins, and one of the readiest methods of doing this is by the introduction into the tissues of the toxins of the disease in question. Now at present it is difficult to separate the toxins from the micro-organism producing them and we accordingly must make use of a sterilised suspension of the micro-organisms themselves which contain the toxins. If we can safely do this we give the patient a better chance of recovery, because we can regulate the dose of toxin employed without running the risk of overwhelming his powers of resistance as so often happens in the case of an acute general infection. But to do this we must be able to estimate the power of resistance of a particular patient to a particular disease, and this is what Sir A. E. Wright has enabled us to do by his process of estimating the opsonic index. Metchnikoff believed that the phagocyte was the all-important factor in enabling an infected organism to combat any disease, but Wright has shown that the phacocyte is practically useless without the presence of a certain substance in the serum to alter in some way the pathogenic microbe. He calls this substance "opsonin" and terms the amount present in any blood the "opsonic index" of the blood.

Apparently there are opsonins for every microbic disease present in the blood and only the opsonin for the particular disease is affected by the presence of the toxins of the infecting microbe, the others remaining about normal. This statement requires a little qualification, as Dr. T. R. Bradshaw of Liverpool found that inoculations of anti-diphtheritic and antitetanic sera caused a depression of the tuberculo-opsonic index which lasted for some months. He was inclined to assume that it was "due to some property inherent in the blood of the horse and has nothing to do with the specific antitoxins."[2]

At present we cannot measure the amount of opsonin quantitatively but only qualitatively as follows, and I shall describe the process very briefly. We must prepare (1) a solution of white blood corpuscles by centrifugalising a mixture of a few drops of any human blood in a small quantity of normal saline solution to which has been added 1 per cent. sodium citrate. The supernatant fluid is syphoned off and the corpuscles are then washed in normal saline solution alone and centrifugalised and the supernatant fluid is syphoned off, leaving only blood corpuscles, chiefly red with leucocytes in the upper layers. 2. An emulsion of the microbe towards which the opsonic index is to be estimated. This is made by rubbing up a culture (or in the case of tubercle bacilli the dried bacilli) in saline solution of 1·5 per cent., to form an emulsion, which is then diluted to the proper strength, which can only be learnt by practice. 3. Some of the patient's serum is obtained by allowing a few drops of his blood to clot in one of Wright's capsules. Equal volumes of these three are fixed in a capillary pipette and incubated at blood heat for from 10 to 15 minutes, then mixed on a slide, and an ordinary blood film is made on a glass slide which has been rubbed over with finest emery paper. The film is fixed in saturated mercuric perchloride solution, washed, stained in carbol-fuchsin, decolourised in 2 per cent. sulphuric acid, washed in water and then in 0·1 per cent. sodium carbonate, and counterstained in methylene blue. The leucocytes are found at the edge of the film and the number of micro-organisms in 50 of the polynuclear cells is counted under the microscope. An exactly similar proceeding is adopted, only using the serum of a normal man in the place of that of the patient. The opsonic index is obtained by dividing the number of engulfed organisms in the patient's slide by the number in the normal slide.

It has been found that the opsonic index in normal healthy people (who are apparently free from tuberculous infection) varies between definite limits, and Bulloch,[3] who examined many cases, put these limits as from 0·8 to 1·2. Urwick confirmed this in about 20 cases and I have found practically the same figures correct in seven persons and all except one are well within these limits. In one case where at two days' interval it was 1·3 I cannot find any satisfactory explanation as the man is apparently quite healthy without any predisposition to tuberculosis. Urwick[4] in 33 cases of all stages of pulmonary tuberculosis found that the opsonic index was usually higher than normal, and this is probably owing to auto-inoculation from injudicious exercise and work, and with auto-inoculation we probably get a high index when the immunising machinery is strong and a low one when it is weak.

I do not know of any estimations of the opsonic index in persons predisposed to tuberculosis because I suppose that such cases are not easy to obtain with a subsequent confirmation of the diagnosis by actual development of the disease, but we may almost certainly presume that the opsonic index in such persons is low—i.e., that their resistance to the disease is feeble, and hence they sooner or later fall victims to it.

With regard to our sanatorium cases I have divided them into several classes and I shall deal with each in turn.

1. In ten early cases with a small amount of mischief only, whose indices I have estimated as soon as they came, I have found that six of them have an index which is normal or above and four have an index below normal. In all except one case the index is within the normal limits (0·8-1·2) and I do not see that the estimations would have been of much service in diagnosis. Of course, if the index is above or below these limits or varies from day to day I think that the diagnosis of tuberculosis is practically certain, though in the series of normal persons mentioned I had one with an index of 1·3. So far as I have yet observed this difference in the opsonic index does not seem to make any difference in prognosis, as all these cases have done, or are doing, well with ordinary sanatorium treatment. After treatment by sanatorium methods for varying periods (without any inoculations of tuberculin) the index has risen in three cases and fallen in three, though in three of them the disease was not arrested when the patients

[1] A paper read before the Manchester Medical Society.

[2] THE LANCET, May 19th, 1906, p. 1357.
[3] THE LANCET, Dec. 2nd, 1905, p. 1603.
[4] Brit. Med. Jour., July 22nd, 1905.

left the sanatorium. In the case of the other indices they are about equally divided—above and below normal—but I do not know what they were when the patients came. From these figures it is difficult to say what effect sanatorium treatment has on the opsonic index, for it probably depends on the index on arrival and this, again, depends on the amount of auto inoculation from exercise, work, &c., that the patient has undergone before coming to the sanatorium.

2. In acute pulmonary tuberculosis where there is a high temperature and the patient is apparently going downhill rapidly we get an index which varies from day to day. This variability is due to auto-inoculation which causes not only a fluctuating index but also a high temperature, but because a patient has a high temperature one cannot assume a fluctuating index, as we have a case at present where the temperature is high while the tuberculo-opsonic index is steady, the temperature being possibly due to staphylococcic infection. We have had three of these acute cases where we have been able to estimate the indices. In the first case we were only able to make a few estimations as we sent the patient home because he was rapidly losing ground. In the second there was extensive mischief in both lungs with high temperature and the index fluctuated greatly. He left us after four months to go to a sanatorium in the south of England where it was warmer, but just before he left his temperature showed signs of falling. At the other sanatorium his temperature continued to fall and he was soon on exercise and gradually improved. He returned to us in July with his lungs much quieter, a good temperature, and a lower and steadier index. Two months' later his lungs were quieter still, his temperature was better, and his index was keeping steady. In the third case there was a history of irregular life and much alcohol with extensive acute mischief of short duration with cavitation, high temperature, and an irregular fluctuating index. With two months' rest in bed and three months' further rest on a couch in the garden the lungs quietened considerably, the temperature fell to normal, and the index became steadier. These cases, then, seem to show that a fluctuating index is a sign of acute mischief and that as the case improves and the mischief quietens the index becomes steadier and tends to approach the normal line. They also show to a certain degree that the ordinary fluctuations of temperature have nothing to do with variations in the opsonic index, as already shown by Urwick, Lawson, and others.

3. In ordinary sanatorium cases where there is a fair amount of disease in a subacute state we get an index which is usually about normal. Lawson and Stewart[5] found in 24 out of 25 cases that the index was low but we have usually found that it is just above normal—i.e., above in 14 cases and below in seven—and, so far as I can see, this difference in indices does not correspond to a difference in the acuteness of the case. In these cases there may be an absence of stimuli from auto-inoculation or the immunising machinery may be worn out, but I think that the former is the correct cause, because if these cases are inoculated with tuberculin the opsonic index usually rises and by suitably spaced inoculations can be kept raised.

4. In the class of cases called "sanatorium cures," more properly arrested cases, Bulloch[6] found the index depressed in 13 out of 14, while Lawson and Stewart[7] found in 30 cases cured in a sanatorium without inoculation that the index varied from 0·5 to 2·1, 17 being 1·0 or above. In four old cases I have found the index above normal in three and below in one, the latter having been well since 1900 and possibly approximating to a normal person. This question of the index in a "cured" patient is important because if it be more usually found low it seems as if the patient's resistance was not permanently affected by treatment, and that he therefore runs a risk of further infection, but before accepting this as a definite statement we want to know if the cases were truly arrested and not simply patched up temporarily, and also what their index was before they started treatment—a point that cannot be settled yet as the method of estimating the opsonic index has not been in existence long enough to secure any results.

5. In cases of tuberculous glands Wright has, so far as I know, invariably found the index to be low, and Bulloch[8] in two cases found it to be 0·3 and 0·6. In one case of tuberculous cervical glands and in one of tuberculous mesenteric glands we found the index low, though in neither case was it as low as Wright and Bulloch seem to have obtained.

6. In one case of tuberculous enteritis (apparently), where there is a very little subacute lung mischief, we obtained an index below normal at first, but there seems to have been auto-inoculation at short intervals because the index has fluctuated and these fluctuations correspond more or less closely with attacks of acute abdominal pain, slight diarrhœa, and a rise in temperature.

Of course, there are other tuberculous affections, such as lupus, disease of the joints, larynx, genito-urinary system, and also diseases due to infections by other organisms, but as I have had very little practical experience of these cases I do not propose to say more than a few words about them incidentally later, but shall leave them in the hope that others may tell of their experience.

Now having shown what the opsonic index is and how it varies in different cases of tuberculous disease, I must pass to the practical bearing on the treatment of such cases and I must deal with each of these classes in turn and show how estimations of the opsonic index may help us. It must be obvious to everyone that it is desirable to raise the opsonic index to normal or above, especially in those cases where it is low, for as the plasma is the fluid which bathes all the tissues of the body and as the opsonin exists in the plasma and is the means of altering the invading micro-organisms so that they can be taken up by the phagocytes, it follows that a plasma rich in opsonins will be a powerful means of enabling the organism to resist the ravages of the micro-organisms, and therefore we may safely say that a high opsonic index is of undoubted value if it can be maintained for any length of time.

Wright[9] has shown that the opsonic index can be altered in either direction by an appropriate dose of the appropriate vaccine. He defines a vaccine as "a sterilised and standardised suspension of micro-oganisms" and it is made as follows: The micro-organism, be it staphylococcus, tubercle, or any other kind, which is found in the blood or tissues of the patient, is grown until a pure culture is obtained. Then a small quantity of the growth is rubbed up with normal saline solution to which 0·25 per cent. of lysol is added and the whole is heated to 60° C. for an hour to make sure that all the micro-organisms are killed. This is then standardised by counting it against a small quantity of blood where the number of red blood cells is approximately known. In the case of tubercle bacilli Koch's T.R. practically corresponds to this description as it consists of finely ground-up bodies of dead bacilli and hence it is used as the vaccine in tuberculous diseases after appropriate dilution.

When a patient is inoculated with a vaccine there is almost invariably at first a drop in the opsonic index (negative phase) which lasts from a few hours to 14 days, but this is followed by a rise in the index (positive phase), usually to a higher level than it formerly stood at, and this is maintained for a varying time, being succeeded by a gradual fall back to about the original, though often there is a slight permanent increase. Wright found that it was possible to accumulate negative phases and is inclined to attribute the unfortunate results that occurred when Koch's T.R. was first introduced to the large doses frequently employed, causing an accumulation of negative phases. So far it has not been found possible to accumulate positive phases, but by the use of judicious inoculations and frequent estimations of the opsonic index one positive phase can be followed by another with only a short slight negative phase in between. If we wish, therefore, to get the best results from our inoculations we must estimate the index frequently and use appropriate doses of vaccine. For the first condition we must have our patient under constant observation, so that the index may be estimated daily, if necessary, and so that auto-inoculation due to injudicious exercise may be avoided. Exercise undoubtedly affects the opsonic index, for Ellett[10] showed that in men training for a boat race there was a considerable fall of the index when they finished their day's outing as compared with that before they went out. Then, again, Meakin and Wheeler[11] showed that in sanatorium patients exercise is followed by auto-inoculation causing

[5] THE LANCET, Dec. 9th 1905, p. 1679.
[6] THE LANCET, Dec. 2nd, 1905, p. 1603.
[7] THE LANCET, Dec. 9th 1905 p. 1679.
[8] THE LANCET, Dec. 2nd, 1905, p. 1603.
[9] THE LANCET, Dec. 2nd, 1905, p. 1598.
[10] Brit. Med. Jour., July 21st, 1906.
[11] Ibid., Nov. 25th, 1905.

negative and positive phases and I have confirmed this in a few cases.

As regards the appropriate dose of vaccine, this can only be learnt by experiment and repeated estimations of the index, but it has been proved that the large doses (i.e., $\frac{1}{10}$th of a milligramme and upwards) recommended in the directions given with Koch's tuberculin are too big and that very good results can be obtained with a very much smaller dose, and we have had a patient whose index responds readily with a dose of $\frac{1}{2500}$th of a milligramme, though the more general dose that we use is $\frac{1}{1000}$th of a milligramme. With small doses such as these the negative phase is absent (or more probably very short) and there is, as a general rule, no rise of temperature. In one case after the first inoculation of $\frac{1}{2500}$th of a milligramme there was a good rise of temperature which, however, did not occur after the next inoculation of $\frac{1}{2500}$th of a milligramme, but then this patient was an extremely nervous individual who had been imagining all sorts of horrors as to the process and results of inoculation. In another case several inoculations were followed by no rise of temperature and I believe that this is the more usual course of events. Auto-inoculation, too, probably occurs without any rise in temperature except when it is due to a fresh infection.

As regards the frequency of inoculation, this depends on the length of time that the positive phase lasts, and we usually find that at first we have to inoculate at about from seven to ten days' interval, while as the number of inoculations increases the frequency is diminished, until we have had a positive phase lasting two months after an inoculation of $\frac{1}{4000}$th of a milligramme.

If we now consider the various classes of case in turn we come first to that of persons *predisposed* to tuberculosis. In these cases, after due estimation of the opsonic index, it might be quite worth while to give a few inoculations of T.R., so as to raise their index to normal or higher, for it has been found that even in healthy people the tuberculo-opsonic index rises rapidly after a dose of T.R. Of course the treatment might have to be repeated several times, but even then I think that it would be quite worth while if it procured immunity from the disease. In the *early* cases of pulmonary tuberculosis I do not think that there is much object in inoculating as practically all these patients do well with ordinary sanatorium treatment, though Trudeau seems to have found at the Adirondack Sanatorium that he gets a better percentage of "cures" in those cases which have been inoculated than in those which have not. So far I have not used inoculations in any of these cases and cannot therefore speak from experience. If, however, I found that an early case was not getting well with ordinary sanatorium methods I should certainly advise inoculations. In cases of *acute* pulmonary tuberculosis I do not consider that it would be advisable to inoculate, because if the index naturally fluctuates rapidly from day to day it is quite conceivable that—in spite of the utmost care in estimating the index—one might chance on a negative phase, which would only be increased by that due to the inoculation, and harm might be done. In these cases I think that our only chance lies in absolute rest and feeding as much as possible in the hope that the disease may be arrested as in the cases that I have mentioned before. Then later, when the lungs are quieter and the index has become steady, inoculations might do good and help towards completing the so-called cure.

In the ordinary sanatorium cases where the mischief is in a subacute state and where the patient does not seem to be making the progress that we can reasonably expect, I think that inoculations of tuberculin, controlled by the opsonic index, may do a considerable amount of good. In these cases there is probably an absence of stimuli to the immunising machinery and there is accordingly no corresponding production of antitoxins. If, now, by inoculating we give the necessary stimulus we should get a corresponding production of antitoxins accompanied by a rise in the opsonic index and improvement in the lung condition. The index does not, however, always respond, for in one case a fair amount of improvement was found in the lung condition without really much effect on the opsonic index. So far we have not had a large number of cases inoculated because we always first try what ordinary sanatorium methods will do, but if we find that the patient is not progressing satisfactorily we advise inoculations in the hope that the extra stimulus will help on to a "cure." Out of seven cases of this class that we have inoculated, one patient left after three inoculations before there had been time to obtain any effect, three patients have left much improved, and three are still under treatment.

Of the three which have left much improved I will give brief details. The first patient had subacute mischief in the upper half of each lung of about one year's standing. We began inoculating him fairly early and when he left eight months later the disease had quite cleared up and there were only the signs of healed lung present. The mischief certainly disappeared in a more complete and rapid fashion than I remember to have seen with sanatorium treatment alone. After each inoculation there was a negative phase, followed by a considerable rise in the index—on one occasion to 2·1. At first, when we were having the indices estimated by Dr. R. H. Urwick, they were only done before and after each inoculation and hence there were recorded only sharp ups and downs, but later, when we were doing the estimation ourselves more frequently, we got more gradual fluctuations. At first we were using doses of $\frac{1}{1000}$th of a milligramme (which Sir A. E. Wright at that time recommended), but later we used only $\frac{1}{2500}$th of a milligramme, and though the index did not rise as high, still it remained up for a considerable time—in one case it did so for nearly two months. The last two estimations which were made three months after he left the sanatorium and had been carrying on treatment at home without any inoculations for four months show that the index has dropped below normal.

The second patient had considerable mischief in the left lung with a right lung collapsed by old pleural effusion and we did not begin inoculating until the lung condition seemed to have become stationary under treatment. After two or three inoculations he seemed to go ahead again and the lung condition improved considerably before he left, three months later. His index from being chiefly subnormal rose to above normal and kept almost entirely above it. It dropped again after he left.

In the case of the third patient, as in that of the preceding one, we noted that after a few inoculations the bacilli in the sputum had clumped, and if clumping is a sign that the bacilli are finding the conditions adverse to them it shows that the inoculations are undoubtedly doing good. This patient had been undergoing sanatorium treatment for some years and had a fair amount of chronic mischief in each lung. After the inoculations this condition improved considerably but his opsonic index made very little response to the inoculations and remained about constant, though very frequently estimated.

Of the three patients whom we are at present (November, 1906) inoculating the first had the whole of the right lung and half of the left affected with mischief in a subacute state, and as after six months' sanatorium treatment her progress—which had been very good—had apparently come to a standstill we advised her to try inoculations. Her index responds fairly well to small doses of tuberculin and the lung condition is again improving. The next patient had moderately acute mischief in the upper lobe of the left lung with some infiltration of the apex of the lower lobe. Since we began inoculating him a month ago the lung condition has improved and there are much less cough and expectoration. Both he and the last patient report also an improvement in the appetite since beginning inoculations. The last patient of this class had rather acute mischief in the left upper lobe, with a large cavity, some scattered mischief in the right lung, a small ulcer on her right vocal cord, a high temperature ranging from 101° to 103° F., a very feeble general condition, and a weight of only 4 stones 11 pounds. Sir A. E. Wright began inoculating her and then sent her on to us for sanatorium treatment. She responded readily to inoculations of $\frac{1}{2500}$th of a milligramme of T.R. and her lung and throat condition had improved somewhat, but the great difficulty in her case was the poor general condition, combined with low weight and extremely small appetite. From her opsonic chart there appeared to be no auto-inoculation of tuberculin, for her index rose and fell regularly after each inoculation, and therefore I am inclined to think that her temperature was not due to the tubercle bacillus but possibly to staphylococcus or pneumococcus, both of which were found in her sputum.

We have had two cases of tuberculous glands. In the first the patient had had a slight attack of pulmonary tuberculosis but had got quite well. In December, 1905, he began to have acute abdominal pain, chiefly in the right side of the abdomen, and two irregular painful swellings could

be detected on palpation, one near the umbilicus and the other external and higher up. Owing to the severe pain, which I thought to be due to a local peritonitis, I kept him quiet in bed for nearly five months without much, if any, improvement, often having to use large doses of morphine to check the pain. Then I began inoculating him with a tubercle vaccine. After five inoculations he could walk a little, and after two or three more he could walk fairly well and he went home. He came back a little later with a return of pain which subsided after an inoculation or two, and a short time later he climbed Moel Famman (1800 feet) without more than temporary discomfort. He has now, except for a very few occasional attacks, been practically free from pain for a year, but has come back recently for a few inoculations to try to get rid of the pain altogether. I believe that he has had tuberculous mesenteric glands, causing a local peritonitis, and that the inoculations have caused the glands to decrease in size and to become much quieter and have also abolished the peritonitis, leaving only adhesions from which he occasionally gets pain. This patient also had a form of acne all over his back which no treatment seemed to clear up, but it all disappeared after a few of the T.R. inoculations however, possibly proving that it was tuberculous in origin.

In the second gland case there were tuberculous cervical glands in a patient who had been operated on for them about a year ago. When he came to us the glands were all round the angle and ramus of the inferior maxilla on the left side and he had an erratic high temperature. We began inoculating him after a month's rest in bed, and a month later the temperature had fallen considerably and the weight had gone up while the glands had decreased in size. Two months later the temperature had fallen quite to normal, the weight had increased about a stone, and the glands were much diminished. Then a sinus formed and a fair amount of discharge came away and several of the glands got much smaller. Since then they have continued to decrease with more inoculations, but the sinus has persisted and we are now using a staphylococcic vaccine and the amount of discharge is perhaps slightly less already.

Of course, inoculations of tuberculin will not cause absorption of chalky or caseous material, but I am sure that if these stages have not been reached they will cause absorption of much, if not all, of the inflammatory material of the glands, whilst probably rendering a subsequent operation smaller, easier, and more likely to heal perfectly, as Gray [12] of Aberdeen has already found.

We have one case of tuberculous laryngitis which is being inoculated and so far as the case has gone I think that the inoculations have done good, but it is too soon to speak with certainty yet. Apart from tuberculous cases we have had one case of furunculosis in which the boils disappeared after two inoculations of a staphylococcic vaccine, and in this case it is interesting to note that the staphylococcic index responded well to the inoculations whilst the tuberculous index remained stationary.

Before closing there are one or two points that I should like to mention with regard to the inoculations. At present we confine our inoculations to those subacute cases which do not seem to be progressing as satisfactorily as we could wish, but there is no reason why all cases, except perhaps acute ones, should not be so treated, and even the acute ones might be inoculated provided that very small doses were used so as to produce a very transitory negative phase. These acute cases are at present our most hopeless ones, and if we can get anything that may do them good I think that it will be worth trying. We always estimate the opsonic index several times before beginning to inoculate so as to make sure that there is no auto-inoculation, because one does not wish to add even a small negative phase to one already present from natural occurrences. Again, in order to avoid auto-inoculation from exercise we always rest our patients for one day before and two or three days after an inoculation. We usually start with a small dose, such as $\frac{1}{10000}$th of a milligramme or $\frac{1}{1000}$th of a milligramme of tuberculin, and it is wonderful what an effect such a dose has on the index besides being practically without any risk or negative phase.

Of course, in cases of pulmonary tuberculosis there is usually a mixed infection, and after, or while, using tuberculin it may be necessary to give inoculations of a staphylococcic or pneumococcic vaccine before the patient will get well. Gray of Aberdeen noted this in connexion with cases of local tuberculosis, and he also found that patients who were subsequently operated upon healed more rapidly and perfectly and were less liable to sinus formation than those who were not previously inoculated.

Before beginning to inoculate it is necessary to make sure that the vaccine corresponds exactly to the micro-organism with which the patient is affected, and in most cases it is necessary to make a vaccine from a culture of the particular germ which is causing the disease. In the case of tubercle this is almost impossible owing to the difficulty of culture, but if it could be done the results might be even better. We have not yet had any untoward effects from inoculations, though on two occasions the temperature has risen afterwards for a day or two. The good effects are a lessening of activity—as shown by improvement in the physical signs and lessening of the amount of sputum—and improved appetite and increase of weight.

I am afraid that I have dealt with this great subject very imperfectly but it has proved a most difficult task to be brief and at the same time to say exactly the right thing to make myself clear. I have dealt almost entirely with the tuberculo-opsonic index, because it is the one with which I am best acquainted; but Sir A. E. Wright and others have proved that the principle of vaccine inoculation is available in many other germ diseases. The great drawback at present is the length of the processes which render the method difficult of general application, but to get the best results I feel sure that one must make use of the opsonic index and not give inoculations without any guide. Whether Sir A. E. Wright will add to his already brilliant researches and devise a shorter method of controlling the inoculations I cannot say, but there is no doubt in my own mind that by the present method he has made a most valuable addition to our available resources for combating disease.

Ruthin.

[12] THE LANCET, April 21st, 1906, p. 1099.

A REVIEW OF THE PRESENT MEANS OF COMBATING SLEEPING SICKNESS.

BY ALLAN KINGHORN, M.B. TORONTO,

AND

JOHN L. TODD, B.A., M.D., C.M. McGILL.

(From the Runcorn Research Laboratories of the Liverpool School of Tropical Medicine.)

THE recent public confirmation by Koch [1]* of the value of gland palpation and puncture in the diagnosis of human trypanosomiasis and of atoxyl in its treatment has once more attracted considerable interest to the existing means of combating sleeping sickness. In diseases of this type, like malaria, in which the specific parasite is carried from vertebrate host to vertebrate host by an invertebrate intermediary, prophylactic measures designed for the protection of the vertebrate host may be directed either against the parasite or against its transmitting agent. It is possible that *Trypanosoma gambiense* may be parasitic in other vertebrate hosts than man and that it may be transmitted by insects other than tsetse flies (*Glossina palpalis*), but so far as is at present known it occurs only in man and can be carried from man to man only by those insects. In practice efforts to check this disease will therefore be directed (1) against its transmitting agent—the flies—(*a*) by destroying them or (*b*) by preventing them from reaching and biting men; and (2) against the causative parasite—the trypanosome—(*a*) by the treatment of persons already infected and (*b*) by their isolation in order that they may not constitute foci of infection for other individuals.

(1 *a*).—Comparatively little is known of the bionomics of the tsetse flies and at present there seems to be no weak point in their life-cycle at which they may be easily destroyed. Their greatest weakness seems to lie in the fact that the females deposit only one living larva at a time, and this (*Glossina fusca* [2]) only at intervals of from two to three days. The larva is placed on the ground, becomes a puparium almost immediately, and in from five to six weeks

* The figures within brackets occurring throughout this article refer to the bibliography at the end.

the fly hatches out [3]. It has been suggested that fly-infested areas should be frequently fired for the purpose of destroying the fly while it is at this stage. In this connexion it is important to note that *Glossina palpalis* has been reported to deposit its larvæ about the roots of banana trees [4].

(1 *b*).—It is certain that the existence of an area 300 yards in width, free from rank undergrowth or grass, around a residence will do a very great deal to keep it free from tsetses [1, 2, 5]. The flies prefer rank vegetation near water; native villages and European settlements should, therefore, be placed as far as possible from such localities or, if this is impossible, they should be kept clear of undergrowth. The use of wire gauze and netting—often advisable, particularly when travelling by canoe—will be matters for personal care.

(2 *a*).—Very, very many drugs have been used in the treatment of human trypanosomiasis. The one which, so far, has given the best results is that preparation of arsenic—"atoxyl"—first recommended by Thomas and Breinl [6]. Their work has recently been confirmed by Kopke, van Campenhout, Broden and Rodhain, and Koch, all of whom have had a certain amount of success in the treatment of patients [7]. Koch, in particular, warmly advocates its use. Trypanosomiasis is a very chronic disease. It is well known that persons, always considered healthy, may die from the disease after a residence of from seven to 10 years in a country where sleeping sickness does not exist. When this is remembered the question must arise whether the "cures" recently reported will prove to be permanent. A very marked improvement almost immediately follows the administration of atoxyl [6 (p. 60)], but the experiments on animals made by Thomas and Breinl conclusively show that in spite of continual treatment there is frequently a recurrence of the disease and that death may finally follow, just as in an untreated trypanosome infection. The disease has unfortunately taken this course in some of Kopke's patients [15]. In our opinion the exact value of "atoxyl" in sleeping sickness is still problematical. That it has a considerable beneficial effect is certain; to obtain the greatest benefit from its use it must be given continuously and regularly [6]. It is only by the careful work along these lines of observers who have an opportunity of treating cases of human trypanosomiasis and who are prepared to keep records of their patients for several years that it will eventually be possible to determine the exact therapeutic value of this drug in human trypanosomiasis. In the meantime, however, its use is certainly strongly indicated, together with the employment of every aid to the general building-up of the patient's system [6 (p. 51)].

(2 *b*).—The means by which infected persons are to be prevented from becoming dangerous to those who are still healthy will, of course, vary as the disease is endemic or not in the district under consideration. In some districts the percentage of infected persons is so large that attempts to segregate them would certainly fail. In such localities, as well as in slightly affected ones, every effort should be made to persuade the natives to place their villages in cleared areas as far as possible from tsetse flies.[1] It will occasionally be practicable to establish villages of treatment and detention in districts in which the disease has only recently appeared. Such villages should be situated in places free from tsetse flies. In them would be isolated all local cases of sleeping sickness, whether indigenous or introduced.

Considerable success is anticipated from the application of quarantine measures designed to arrest the spread of human trypanosomiasis by preventing the entrance of persons infected with the disease into districts where it does not already exist [8]. The epidemiology of sleeping sickness shows that, as a rule, it *spreads* but slowly from a given centre but that it may be rapidly *carried* from infected to uninfected districts by the advent of persons suffering from it. Now, the individual African does not travel long distances alone; long journeys are made in caravans either purely native or under the control of Europeans or Arabs. Traffic of this sort, whether for trading or labour purposes, is comparatively easily controlled; therefore, it will be possible to prevent infected natives travelling in this way from entering uninfected districts.

It is well known that persons infected with trypanosomes may appear to be well and may work like healthy individuals. It was previously impossible to diagnose such cases, save by tedious examinations of their blood. Greig and Gray [9] showed that trypanosomes could easily be found in the juice aspirated with a hypodermic syringe from the enlarged lymph glands of such cases. This observation was confirmed in the Congo, and it was found that in practice every negro who has enlarged cervical glands must, other causes being absent, be considered to be a case of trypanosomiasis until the contrary can be proved [8, 10]. This conclusion is supported by the results of further work in Uganda [1, 11] and in Sierra Leone [12] and Central Africa (private communication). We have therefore an exceedingly simple method of detecting early cases of human trypanosomiasis which may be applied by almost any intelligent person. That it is an efficient method has been shown in the Congo [8] by the examination of over 6000 natives inhabiting both infected and uninfected districts.

The way in which the above diagnostic method is to be applied to the protection of threatened areas in which sleeping sickness is not yet endemic is briefly as follows. To prevent infected persons from entering such districts, posts of inspection, under the control of medical officers, are to be placed at suitable points on the main caravan routes and all travellers will be examined. To obtain the expulsion of imported cases already introduced it will be made an offence for any employer or director of labour in an uninfected district to have under his control any person with enlarged glands.[2] All suspected persons will be sent towards an infected district to the nearest post of inspection, where the resident medical officer will confirm the diagnosis and will send the patient to one of the villages of detention where the case will receive treatment. It is superfluous to say that these villages should only be established in districts where sleeping sickness is already endemic. The difficulties of enforcing such measures are doubtless enormous but they will at all events put a stop to the importation by Europeans or Arabs of negroes—labourers or soldiers and their women—suffering from trypanosomiasis into districts where the disease was previously unknown. Much of the spread of human trypanosomiasis in the Congo basin is certainly due to this factor [8].

Natives of many parts of Africa already know and realise that enlarged glands mean sleeping sickness [13]. Many tribes have the conception of quarantine since they isolate their sick, and, if the matter be properly handled, it will not be difficult, in the Congo Free State at least, to obtain the eager coöperation of some of the more intelligent chiefs, who know what the disease means, in applying a measure which promises to check the advance of sleeping sickness.

In conclusion, it must be insisted that even if a drug be found "specific for trypanosomiasis as quinine is for malaria," every other means of fighting the disease must still be employed—mosquito destruction and segregation are much-employed methods of public malarial prophylaxis. As has been already said, we have no means of destroying tsetse flies in large numbers. Therefore those who have the direction of affairs in Africa should, by enforcing quarantine and isolation measures, do all in their power to prevent the further spread of human trypanosomiasis. The need for such preventive measures is immediate and urgent, since it is only too apparent that the disease is rapidly spreading southwards. One of us published a few months ago in THE LANCET [14] a map taken from Memoir XVIII. of the Liverpool School of Tropical Medicine, which indicated the distribution of sleeping sickness in the Congo Free State in 1905. The disease now extends much further to the south. In the east the disease is actually endemic along the shores of Lake Tanganyika between about 4° and 7° South of the equator. Imported cases have been reported from Moliro, at the southern end of the lake, as well as from Kasenga, and from another point equally far south (10° 30') two degrees further west. In the west, in Portuguese West Africa, cases have been reported from equally far south.

Just at present new mining fields are being opened, and new railroads are being built in the south of the Congo Free State. Labourers will be brought to these works from considerable distances, and unless the greatest care be taken in their recruitment, their camps will become centres for the

[1] It must be remembered that a place cannot be said to be free from tsetse flies until after a careful search extending over a considerable period of time has been made [2].

[2] In the Congo Free State this is now an offence punishable by a fine of 200 francs with, in the case of an official of the Free State, such additional punishment as seems advisable.

dissemination of human trypanosomiasis in a district at present uninfected by that disease.[2]

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PARATYPHOID FEVER IN THE TROPICS: CASES OF MIXED INFECTION.

PARATYPHOID FEVER AND MALARIA; PARATYPHOID FEVER AND STAPHYLOCOCCÆMIA; PARATYPHOID FEVER AND PNEUMOCOCCÆMIA; PARATYPHOID FEVER AND TYPHOID FEVER.

By ALDO CASTELLANI, M.D. FLORENCE,
DIRECTOR OF THE CLINIC FOR TROPICAL DISEASES, COLOMBO.

As a small addition to our knowledge of the occurrence of paratyphoid fever in the tropics, it may be desirable to put on record the cases which I have observed in Ceylon, where the presence of the disease was hitherto not recognised. In the years 1904 and 1905 four cases came under my notice, and during the severe prevalence of typhoid fever in Colombo during the months of March, April, and May, 1906, I examined five other cases. Besides these nine cases of simple paratyphoid infection, I have met with four cases of mixed infection.

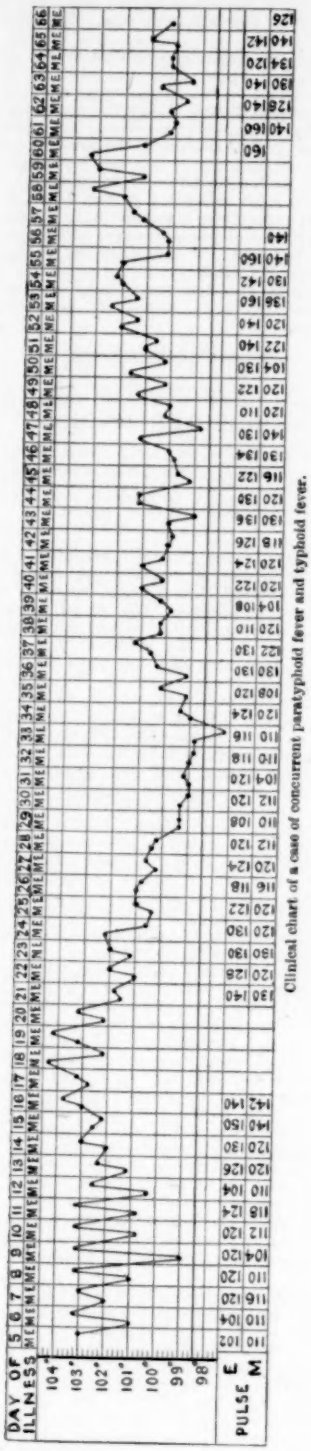
The cases of simple paratyphoid infection examined by me could not be clinically differentiated from typhoid fever, of which disease five presented all the classical symptoms: gradual onset, typical temperature chart, and enlargement of the spleen. In the remaining cases the disease began suddenly with shivering and rheumatoid pains, the temperature rising very high immediately. In the tropics, however, typhoid fever may not rarely present these atypical symptoms. The Widal reaction performed several times was negative in all. The stools and urine were investigated repeatedly, using MacConkey's media for plating. The bacillus typhosus was never isolated. In five cases a bacillus was isolated with the characters of the bacillus paratyphosus A (Brian and Kayser): actively motile; no liquefaction of gelatine, very slight production of indol; milk acid, but unclotted; acid and gas in dextrose, lævulose, maltose, and mannite; no change in saccharose and lactose. In four cases a bacillus was grown with the same cultural characters, the only difference being that it produced a little more indol, and that in litmus milk it induced a slight initial acidity soon followed by a well-defined and permanent alkalinity (bacillus paratyphosus B, Shotmüller). The two types were further determined by agglutination tests, using also some sera of known origin. All the cases ran a mild course with the exception of one which ended fatally. This case has some interest from a pathological aspect. It is generally admitted (Lucksh, Wells, Scott) that in paratyphoid fever there is, as a rule, absence of intestinal ulceration. In my case, however, the lower part of the ileum showed several ulcerations absolutely identical with typhoid ulcers. The mesenteric glands were much enlarged. The ulcers, mesenteric glands, and spleen were examined bacteriologically. The bacillus typhosus was not found. The bacillus paratyphosus A was found to be present in pure culture in the spleen and mesenteric glands; in the ulcers it was mixed with the bacillus coli and other organisms.

CASE 1. *Paratyphoid fever and malaria.*—The patient was a man, aged 24 years. There was no previous history of malaria or of any other illness. In April, 1905, a few days after he had returned from a malarial district, where he had only been for a short time, he was taken suddenly ill with severe shivering, the temperature rising to 104·2° F. The blood contained numerous parasites of benign tertian. On the second day the temperature was 99·4° in the morning and 101° in the evening; on the third day the patient had shivering again, and the temperature rose to 103·6°. On the fourth day the temperature was 101° in the morning and 102·2° in the evening. On the fifth day it was 100·8° in the morning and 101·4° in the evening. By that time the malaria parasites had completely disappeared from the blood. The temperature, however, continued for nine days more, varying from 99° to 102°. From the fifteenth to the twentieth day it varied from 98·6° to 100·8°. The spleen could never be palpated; there were no roseola spots. There was marked constipation. The patient received 30 grains of euchinine daily during the first week and 15 grains afterwards. On the seventh day of the disease the stools were examined bacteriologically and a bacillus paratyphosus B (Shotmüller) was grown. On the tenth day the same organism was grown from the urine. The blood of the patient agglutinated this germ in a dilution of 1 in 500, while it never influenced the typhoid bacillus. The patient remained in good health for three months, when he again had an attack of fever, the temperature rising to 103·6°; the blood contained some parasites of benign tertian. Euchinine was given. On the third day the temperature rose to 99·4° only and afterwards remained normal. The stools were examined, but only bacilli coli were grown. This second attack was simply of malarial origin.

CASE 2. *Paratyphoid fever and staphylococcæmia.*—The patient was a young German, 26 years of age. There was no history of any disease of importance. He had been for three years in Ceylon and had lived in the bungalow where the case of paratyphoid fever and typhoid fever, described later, occurred. At the end of June, 1906, he had complained of vague malaise and headache. He had pyrexia which never rose above 102·2° F., of rather irregular type. Widal's reaction was negative. The blood was investigated bacteriologically, using my dilution method. A staphylococcus albus was grown. From the stools a bacillus paratyphosus A (Brian and Kayser) was isolated. The blood agglutinated this germ in a dilution of 1 in 800. About a week after the staphylococcus had been grown from the blood the patient developed numerous boils all over the body, some of them rather large. The pus of these boils was examined bacteriologically and the staphylococcus pyogenes albus and aureus were grown. The fever lasted altogether 14 days.

CASE 3.—*Paratyphoid fever and pneumococcæmia.*—The patient was a married woman with nothing of importance in her history. In April, 1905, shortly after having returned to Colombo from the hills, she complained suddenly of sore-throat and of difficulty in swallowing; she had shivering and the temperature rose in a few hours to 103·4° F. When I saw her both tonsils were covered with whitish exudation, the submaxillary glands being enlarged. The lungs were clear and nothing abnormal was to be noticed at the examination of the heart. The spleen was not enlarged. There was a trace of albumin in the urine. Two swabs were taken and were examined bacteriologically, films and cultures being made. In the films extremely numerous diplococci not decolourised by Gram's method were present. Culturally, the search for the diphtheria bacillus was negative; a diplococcus was grown with all the characters of the pneumococcus. The throat symptoms disappeared in four days, but the fever, varying from 100° to 102·4°, did not leave the patient till much later. Her blood was then examined for Widal's reaction with negative results. The blood was also examined for bacteria, using the dilution method. A coccus with the characteristics of the pneumococcus was grown. As at that time a slight diarrhœa had set in the stools were examined bacteriologically; a paratyphoid bacillus of the type B was isolated. The blood agglutinated the bacillus, using a dilution of 1 in 300. The blood had also agglutinating power for the pneumococcus grown from the throat (1 in 80),

[2] Private information indicates the great probability that labourers from the thickly populated but infected areas to the south of Lusambo and from Cabinda will go south to work on the railroads. If such an unfortunate occurrence is to be prevented action must be immediate.



Clinical chart of a case of concurrent paratyphoid fever and typhoid fever.

Five days later the bacteriological investigation of the blood was repeated, the patient having no objection. Four cubic centimetres of blood were distributed in five flasks, each containing 300 cubic centimetres of pepton-broth. Two of the flasks remained sterile; three became turbid; of these, two contained in pure culture a motile bacillus which further investigation proved to be identical with the one isolated from the stools—viz., the bacillus paratyphosus B. The third flask contained in pure culture a coccus with the characters of the pneumococcus. This case is very similar to those described by Baduel of mixed infection of pneumococcus and bacillus typhosus.

CASE 4. *Paratyphoid fever and typhoid fever.*—The patient was a man, aged 36 years, of German nationality. He had lived in Ceylon for 15 years. There had been no previous illness of importance. At the end of May, 1906, he began to complain of lassitude, headache, and loss of appetite. I saw him on the 28th. His tongue was fairly clean and the spleen was slightly enlarged; there were no roseola spots. On the following day I examined his blood for Widal's reaction with negative results; having, however, little doubt that it was a case of typhoid fever, I had him removed to a nursing home. The course of the fever is shown in the accompanying temperature chart. The disproportion between the pulse-rate and the temperature will be noticed at once; even when after three weeks the temperature dropped to nearly normal, the pulse remained very frequent. In my experience this sign renders the prognosis much less favourable. The patient had two very serious intestinal hæmorrhages in the third week. He died in coma after a prolonged illness.

The first bacteriological examination was made on the seventh day of the disease. The stools were collected in a large sterile Petri dish and plated, using the MacConkey medium. All the white colonies which developed were further investigated. The bacillus typhosus and the bacillus paratyphosus B were isolated. The examination of the fæces was repeated twice—once in the third week and once three days before death. The result was the same. On one occasion two strains of the bacillus typhosus were grown: one rendered litmus milk alkaline after 36 hours; the other rendered the medium strongly acid permanently; as regards other culture characters and agglutination tests both strains were identical. The urine was examined bacteriologically twice, on the twelfth and fiftieth days of the illness; on both occasions the bacillus paratyphosus B was grown.

Agglutination tests of the blood gave the following results. On the seventh day of the disease: bacillus typhosus, dilution 1 in 10 negative; bacillus paratyphosus B, dilution 1 in 10 negative. On the seventeenth day of the disease: bacillus typhosus, agglutination limit 200; bacillus paratyphosus B, agglutination limit 300. On the forty-sixth day of the disease: bacillus typhosus, agglutination limit 800; bacillus paratyphosus B, agglutination limit 1000.

The results of the absorption tests carried out according to my method[1] on the forty-sixth day of the illness are collected in the following table:—

—	Agglutination limits before absorption.	Agglutination limits after absorption of the typhoid agglutinins.	Agglutination limits after absorption of the paratyphoid agglutinins.
Bacillus typhosus	800	*nil.*	800
Bacillus paratyphosus B	1000	1000	*nil.*

The result of the absorption test clearly shows that the blood contained *specific* agglutinins for each bacterium and excludes the possibility of the case being one of typhoid fever with the presence of the bacillus paratyphosus B as a mere saprophyte. Both germs had part in the etiology of the infection and the case is to be considered, therefore, a mixed infection of paratyphoid and typhoid fevers similar to the cases recorded in Europe by Wagner and Conradi, Boycott and Gachtgens.

Conclusions.—1. Ceylon must be included among the countries where paratyphoid fever is endemic; both types

[1] The technique to be followed in performing the test may be found in my original paper (Zeitschrift für Hygiene, 1902, p. 1), or in the publications of Kolle and Hetch (Die experimentelle Bakteriologie, 1906), or Boycott (Journal of Hygiene, 1906), &c.

of the disease, paratyphoid A (Brian and Kayser) and paratyphoid B (Shotmüller), are met with. 2. The disease is clinically indistinguishable from typhoid fever, though generally it runs a milder course. 3. In the case of paratyphoid A, which ended fatally, intestinal ulcers were found identical with typhoid ulcerations. 4. Cases of mixed infection are apparently not rare.

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Colombo.

A CASE OF TRANSPOSITION OF THE VISCERA.

BY FRANCIS E. LARKINS, M.B., CH.B. EDIN., D.P.H.,
LATE RESIDENT MEDICAL OFFICER, HOSPITAL FOR SICK CHILDREN, NEWCASTLE-ON-TYNE.

SINCE 1643 only about 200 cases of this interesting condition have been reported, so that the following case may be said to possess the virtue of comparative rarity.

The patient, an infant, aged 12 months, was admitted to the Hospital for Sick Children, Newcastle-on-Tyne, under the care of Mr. T. G. Ouston, suffering from a mastoiditis which proved to be of a chronic tuberculous type and associated with other tuberculous lesions in one leg and both arms. The condition of the child prevented any treatment beyond temporising and death ensued later from tuberculous meningitis.

At the post-mortem examination the following interesting condition was able to be investigated. The heart, of about normal size, lay in the centre inclining to the right, with its apex one inch from the middle line. The right ventricle had hypertrophied walls, simulating those of an ordinary left ventricle. The left ventricle was smaller than an ordinary right ventricle. The organ being kept for hardening as a permanent specimen was therefore not opened so that the condition of the interior was not ascertained. As regards the lungs, that on the right side possessed two lobes, the anterior border having the usual outline of the left. The lung on the left side, with three well-marked lobes, had an uninterrupted anterior border. The œsophagus lay to the left of the aorta in the posterior mediastinum till near the diaphragm, where it crossed that vessel and was then situated to the right of the middle line. The stomach occupied the right hypochondrium and the duodenum proceeding to the left and being reflected round the head of the pancreas turned back towards the right. The vermiform appendix was situated in the left iliac fossa, the ascending colon necessarily being on the left side; the descending colon on the right; the sigmoid flexure in the right iliac fossa, and the rectum commencing from the right side. The foramen of Winslow was on the left side. The liver was normal but was situated on the left side. The spleen was also normal but on the right side. The pancreas was reversed, with its head on the left side and its tail on the right. The left crus of the diaphragm was longer than the right and inserted lower. The kidneys were both normal but the right one was higher than the left. The left suprarenal gland was triangular in shape and the right one was filiform; both were about normal in size for the age of the subject. The arteries and veins showed complete transposition in every detail. The aorta arose from the right ventricle, arched round to the right, and extended down the right side of the vertebral column. The innominate artery was on the left side, having the left recurrent laryngeal nerve reflected round it. On the right side was a common carotid and subclavian artery. The recurrent laryngeal nerve on the right side was unfortunately cut, so that it could not be traced. The long renal artery and intercostals were, of course, on the left side. The pulmonary artery came off the left ventricle and gave three branches to the left lung and two to the right. The veins were correspondingly transposed. The right innominate vein crossed over to the left side where, joining the short left innominate, it formed the superior vena cava, which entered the left auricle. The right renal vein was the longer of the two and into it emptied the right spermatic vein. The left spermatic vein entered the inferior vena cava at the point just below the junction with it of the left renal vein. The thoracic duct was on the right side.

On consulting the literature available on the subject all the cases published up to 1895 amounted to 190, which number was collected by Pic. The earliest reported case was in 1643, occurring at Rome. Complete transposition is the rule, and usually with no other malformations present. Males figure more largely than females in the cases reported. The unusual condition does not in any way inconvenience those affected, few of them being aware of its existence.

The causes of situs inversus I do not intend to go into but would refer anyone who is interested in the subject to a very excellent *résumé* of the opinions of different authorities in an article by Arneil in the *American Journal of the Medical Sciences*, Vol. CXXIV., 1902.

I should like to take this opportunity of thanking both Mr. Ouston and Dr. R. A. Bolam for permitting me to publish the case.

Leith.

THE VISUAL EFFICIENCY OF THE UNCORRECTED MYOPE.

BY J. HERBERT PARSONS, D.SC. LOND., F.R.C.S. ENG.,
ASSISTANT SURGEON, ROYAL LONDON (MOORFIELDS) OPHTHALMIC HOSPITAL; ASSISTANT OPHTHALMIC SURGEON, UNIVERSITY COLLEGE HOSPITAL; LECTURER ON PHYSIOLOGICAL OPTICS, UNIVERSITY COLLEGE, LONDON.

VISUAL acuity, in the generally accepted sense of the term—i.e., the acuity of central or foveal vision—is only one out of many factors which must be taken into consideration in determining the visual efficiency of a given patient, meaning by the latter term the efficiency of the individual from the point of view of sight to perform the various acts and functions of life. In the majority of cases visual acuity is the most important factor, but circumstances may be such as to relegate it to an inferior position. Of the well-nigh innumerable factors which play a part in visual efficiency, many, and amongst them visual acuity, must be regarded from two standpoints, the physical or optical and the physiological. Much misapprehension and extremely erroneous deductions have arisen from ignoring this essential fact. The optical problem itself is much more complex than is often suspected and seeing that it is fundamental, being conditional to many factors in the physiological problem, it is the more necessary that it should be rightly apprehended. It will be well, therefore, to discuss the visual efficiency of the uncorrected myope by the enumeration and valuation of the various physical or optical and physiological (and pathological) conditions of his vision.

Taking as an example a person with myopia of 9 D. the optical conditions will vary according to the nature of the myopia. It is usual to regard such myopia as being invariably due to elongation of the eye, axial myopia, as it is called. Though stretching of the posterior segment of the globe is undoubtedly the most prominent feature in these cases it is probably more frequently than is generally thought, accompanied by some flattening of the cornea, slight displacement of the lens, and possibly some abnormality in the curvature of the lens surfaces. The condition may, indeed, be a complicated one anatomically, resulting in a combination of axial myopia and of curvature myopia, the latter itself made up of complex components. We are at once brought face to face with the intricacy of the problem and the danger of theoretical deductions, for the optical conditions of axial and curvature myopia—to leave out of the question the possible displacement of the lens—are quite different.

Bearing in mind the possibility of error from this source we will consider that the myopia is purely axial. With an axial myopia of 9 D. the posterior wall of the globe is stretched, so that the retina is displaced backwards to the extent of three millimetres as compared with the normal emmetropic eye—i.e., the antero-posterior diameter of the eye measured from the surface of the cornea is 26 millimetres instead of 23 millimetres. Under the conditions which have been accepted the anterior segment of the eyeball is normal in every respect. Consequently, parallel rays of light falling upon the cornea will be brought to a focus

23 millimetres behind it. They will then cross and continue to diverge from each other until they fall upon the retina three millimetres farther back. Hence the image of a distant object, more than six metres away for example, which would have been a sharp inverted image at 23 millimetres, is now blurred owing to the divergence of the rays. Thus far the conditions may be fairly well simulated by a photographic camera. If a distant object is photographed on a sensitised plate situated slightly behind the position of the principal focus of the lens an inverted blurred image results, which is not unlike the retinal image formed in an axially myopic eye. It is by no means justifiable to regard this as other than a very imperfect analogy. It must be remembered that the conditions of magnification are totally different, all the refracting media are different, and the screen is flat instead of being approximately spherical.

Two factors enter into the consideration of the amount of blurring in the myopic eye—viz., the degree of myopia or excess of the axial measurement of the eye over 23 millimetres and the size of the pupil. The image of a spot of light is a diffusion circle, the diameter of which varies with the diameter of the pupil in accordance with the rules which obtain in all optical instruments. In the myope the pupils are usually larger than in emmetropic eyes. Hence the blurring of the image is greater than would be the case with a small pupil. On the other hand, it must be borne in mind that the relative increase in size of the pupils is diminished as compared with the normal eye when the illumination is decreased, consequently there is little increase of blurring due to this cause under feeble illumination. The size of the pupils varies in different myopes; if they are very small, e.g., under eserine, the circle of diffusion becomes very small, so that clear vision may be obtained irrespective of the degree of myopia; of course in these circumstances the image is very feebly illuminated. It is this condition which is induced artificially by the dangerous method of improving the vision of the short-sighted by massage—"without the use of glasses." The amount of massage necessary to attain this end involves risks to the eye which no responsible practitioner would venture to run; moreover, the effect is transient. Stenopæic vision having the same effect as constriction of the pupil, can, however, be attained by other means. By screwing up the lids their margins become the "pupil of entry" of the optical system, the image of a point of light being transformed into a sharply defined line. In this manner distant vision may be very markedly improved, a fact known from time immemorial, accounting, in fact, for the term "myopia." This method of improving vision without the use of correcting glasses is of prime importance in estimating the visual efficiency of an uncorrected myope.

The distance of objects from the eye of course greatly influences the retinal image. Thus, in the emmetropic eye without accommodation the size of the circles of diffusion increases directly as the object is brought closer; the same occurs to a less degree in the hypermetropic eye. In the myopic eye the increase is more rapid within the far point of the eye; at the far point a clear image is formed upon the retina. The effect due to this cause is, however, much modified as regards visual efficiency by the increased size of the image. In all cases as the object is approached the size of the retinal image increases and this may more than counteract the want of clearness due to imperfect focussing. Hence young patients with a high degree of hypermetropia often hold their books very close to the eyes, like myopes, in the same manner and for the same reason that people with corneal nebulæ do.

It is necessary to point out that with a constant size of pupil the luminosity of the retinal image is unaffected by approaching the object nearer to the eye, since the increase in the amount of light according to the square of the distance is spread over an area which is increased according to the square of the radius of the circle of diffusion. This rule does not apply to punctate images; consequently the more accurately the image is focussed upon the retina the brighter it will be. The large pupils of myopes expose the less accurately curved peripheral portions of the cornea and lens, thereby producing a certain amount of aberration which further tends to distort the image. The difference produced by this cause on diminishing the illumination will be less than in the emmetrope owing to the relatively greater dilatation of the pupils in the latter in these circumstances. It is unnecessary to discuss the effects of spherical and chromatic aberration here.

The physical factors which have been considered can be estimated with mathematical accuracy if the requisite data are known. Enough has been said, however, to show that the conditions are so variable even in eyes with the same degree of myopia that only a very limited amount of accuracy is possible in the absence of exhaustive investigation of the individual patient. This is true to a much greater extent of the physiological factors. Setting aside absolutely pathological features which are so common in cases of high myopia—e.g., dense vitreous opacities, patches of choroidal atrophy, macular defects, &c.—there are yet changes in the myopic eye which seriously interfere with a valid appreciation of its probable visual efficiency. Most of these changes militate against visual efficiency, though some may even be favourable in certain circumstances. It is a fact that in high myopia the visual acuity may be less than normal with the most perfect optical correction, and that, too, apart from obvious changes in the media or fundus. This is seldom the case in myopia of moderate degree, e.g., up to 9 D. or 10 D. In myopia of more than 6 D. the field of vision not unfrequently is somewhat contracted for white and red. It is noteworthy here that it is the more luminous parts of the spectrum which are most involved, and this may account for the fact that many myopes seem to see better relatively even than emmetropes in a dull light, a most important consideration in estimating their visual efficiency under such conditions.

Over and above the factors already mentioned there is a psychological factor which is quite individual in its manifestations and in no small degree influences the patient's capabilities. The myope is usually of a studious turn of mind. Whether this be cause or effect in the moderate degrees of myopia need not be argued here. There is little doubt that in the higher degrees, which often begin early and increase rapidly, the dimming of the outer world tends to concentrate attention upon near objects and fosters introspection. How far this tendency will be cultivated depends largely upon the mental capacity of the individual and has nothing to do with the physical and physiological concomitants of myopia *per se*. In the lower classes, amongst whom the very high degrees of myopia are as common as amongst the studious, it has little or no effect, and it is astonishing how slightly these people seem to be inconvenienced in their daily life by their defect. It is by no means uncommon to find patients in a large out-patient clinic who have reached adult life, have very high degrees of myopia, and have never sought advice before. I have known patients with 18 D. or 20 D. of myopia who have never been corrected, yet have walked about in the crowded thoroughfares of the city and East London with impunity and apparently little difficulty. Not only so, but they have rejected any correction whatever, in spite of manifest improvement in central vision when tested with glasses. They have become so accustomed to their large faintly illuminated retinal images that they are hopelessly at sea with the relatively sharp, bright images which the glasses produce. This is the most important, though not the only, reason why very high myopes almost invariably prefer a considerably lower correction than the actual amount of their myopia would indicate.

There are other less potent factors which have not been considered. Enough has been mentioned to show how fallible must be any deduction as to the visual efficiency of any given myope in the absence of a thorough and exhaustive examination of the individual himself.

Wimpole-street, W.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

NOTE ON A CASE OF PRIMARY CHANCRE IN THE NOSTRIL.

BY ASLETT BALDWIN, F.R.C.S. ENG.,
SENIOR ASSISTANT SURGEON TO THE WEST LONDON HOSPITAL.

THE patient, a married woman, aged 26 years, went to the West London Hospital complaining of great pain and swelling in her face. She looked, and said she felt, extremely ill. The orifice of the right nostril was much larger than that of the left. About three-quarters of an inch up the nostril a slough was visible. When this was

removed a red, livid mass was laid bare which quite occluded the passage. The right side of the nose, the right cheek, the right side of the lips (especially the upper), and the glands beneath the right side of the jaw were very much swollen. The swelling of the parts caused epiphora. There was a well-marked secondary rash on the body.

Five months previously the patient's mother, aged 55 years, who lives in a neighbouring house, developed a typical specific throat. This was followed by an intense secondary rash, which has now (July, 1906) somewhat faded but is still well marked on the face. There is also iritis present in the right eye. Nine months previously the granddaughter of the patient's mother, aged 11 years, who lives with her, had a specific throat and rash. She now (July, 1906) shows no sign of the disease. As far as can be ascertained these two last patients showed no primary sore.

The sequence of events was, the granddaughter, aged 11 years, caught the disease first; how, we cannot find out. Her grandmother caught it from her; and finally, my patient caught it from the latter. Although she does not live in the same house she was often in and out of it and frequently took her meals there.

As cases of primary chancre in the nostril are very rare I thought this worth publication. The series shows the importance of warning patients who have contracted syphilis against the danger of infection of other people. It is a matter which I know is very often neglected and ought never to be omitted. All three patients were shown by my friend and colleague, Dr. H. J. Davis, at the Laryngological Society of London.

Manchester-square, W.

NOTE ON A CASE OF HÆMATURIA DUE TO SALICYLATE OF SODIUM.

BY J. D. MARSHALL, M.B. VICT., M.R.C.S. ENG.,
HOUSE PHYSICIAN, VICTORIA HOSPITAL FOR CHILDREN, CHELSEA.

THE patient, a girl, aged ten years, was admitted on Oct. 25th, 1906, to Dr. H. D. Rolleston's ward in the Victoria Hospital for Children. She had been suffering from acute articular rheumatism for three days previously to that on which she was admitted; this was the first attack of rheumatic fever and the only illness that she had previously suffered from was measles when an infant. There was a family history of rheumatism; her father frequently had rheumatic attacks and her brother was a patient at this hospital in November, 1905, suffering from rheumatic fever and chorea. The usual symptoms of acute articular rheumatism were present; the ankles, the knees, and the hip-joints were painful and the skin over the right ankle was reddened. Endocarditis was also present, probably quite recent. The heart was very slightly enlarged. The temperature was 101·2° F. and the pulse was 120 per minute. A purgative was given and then 15 grains of sodium salicylate with double that amount of sodium bicarbonate made up with chloroform water every four hours; this was given for four days, when the child became delirious and vomited twice. The hallucinations were not unlike those of delirium tremens. The salicylate was at once withdrawn and the delirium then very quickly passed off. On the fourth day after admission the temperature, pulse, and respirations were normal.

On Nov. 8th the patient again complained of pains in the joints and salicylates were again given (seven grains in water three times a day). After taking this for two days she again vomited. There was no delirium but the urine contained blood in sufficient amount to give it quite a deep red colour; previously to this the urine had contained neither albumin nor blood. She also complained of severe pain along the left iliac crest and for about one inch above and below it; there was also much tenderness on palpation in the left renal region. No pain at all was caused by movement of the left hip-joint. Salicylates were discontinued on the 11th. The quantity of blood in the urine rapidly diminished in amount and on the 15th the urine was clear and contained neither blood nor albumin; the pain had also disappeared. This pain, which extended from the left loin to the left groin and was very marked along the anterior part of the iliac crest, in addition to hæmaturia and vomiting, presented symptoms not unlike those of renal calculus, but as the patient had never had similar symptoms previously, and the fact that all disappeared when salicylate of sodium was withheld, would suggest that drug as the cause. The pain was in all probability purely a "referred pain" from the kidney, as all along the painful part the skin was very hyperæsthetic, quite as much pain being caused by lightly pinching up the skin as by moderately heavy pressure. It is remarkable, however, that all the signs and symptoms of kidney irritation were confined to one side.

The patient evidently cannot tolerate salicylates, as first these caused delirium and vomiting, and on the second administration hæmaturia, vomiting, and pain. She has remained quite free from pain since Nov. 15th. She now (January) has a mitral systolic and mid-diastolic murmur: the systolic murmur is conducted to the axilla and back. Hæmaturia due to ordinary medicinal doses of salicylates has not, I believe, been frequently seen, or at least recorded, by English observers. It has occurred in salicylism, but probably rarely with such a small dose as that given to this patient.

A Mirror
OF
HOSPITAL PRACTICE,
BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv., Proœmium.

ANCOATS HOSPITAL, MANCHESTER.

TWO CASES OF LARGE VENTRAL HERNIA.

(Under the care of Mr. E. STANMORE BISHOP.)

CASE 1.—The patient, a female, aged 37 years, was admitted to hospital on July 30th, 1906. Six years previously to admission she had had ventrofixation performed for prolapse of the uterus. She was a large, loosely built, flabby woman, with great development of subcutaneous adipose tissue. This operation had been followed by suppuration of the abdominal wound which necessitated her retention in hospital for over a month. The following year she had undergone an operation for hernia at the site of the wound which was unsuccessful; this was evident before her discharge and ever since she had worn a belt which, however, failed entirely to support the hernia. On her admission one-half of the abdominal contents appeared to lie immediately beneath the skin which formed an immense pouch over the front of the lower half of the abdomen. It was impossible to reduce the hernia completely; perhaps one-third of the whole could be returned, but the remainder was evidently adherent to the interior of the sac and could not be reduced; the opening was a wide one and when part of the extruded gut had been replaced it easily admitted all the four fingers of the hand. At its widest diameter when full the sac measured 23 inches transversely by 13 inches vertically; the opening measured at the time of operation three and a half inches from side to side, and extended from the pubes to two inches below the umbilicus. On several occasions during the six years of its existence the patient had suffered from pain in the mass and vomiting; she had also been the subject of "windy spasms." The action of the bowels had been irregular and she was totally unfitted for any work.

At the operation on August 9th, 1906, a curious state of things was found: the skin over the protrusion was brown and wrinkled; a large elliptical piece was removed; the sac thus laid open was lined throughout with peritoneum; adherent to this at many points was a very fat omentum in which were several harder, encapsuled lipomata; a great amount was tied off and removed; its weight after removal was two pounds three ounces. The intestines themselves were not adherent; after the removal of the omentum they could all be reduced into the abdomen proper. The opening between the two cavities precisely resembled the opening into the true pelvis, so much so that a bystander suggested that the sutures had been passed through the edges of the psoas muscles and that it would be impossible to bring them together. The peritoneum covering one edge was divided so as to expose the fibrous lamina of the rectus sheath below; that on the opposite side was left untouched.

Strong iodine catgut was used in mattress stitches, and still further to strengthen the line of union a second layer was superposed upon the first. When the opening was closed a large cavity remained, the subcutaneous fat having been opened up as far as the anterior superior iliac spine on the right; this cavity was lined throughout by peritoneum; no attempt was made to remove this, but a drainage-tube was brought through the side at its lowest point and the large skin incision closed. There were some sickness lasting for a few hours and for a day or two some difficulty in breathing, due probably to the use of ether in anæsthetising, but all this rapidly subsided and her recovery was complete. She left the hospital well and with the long wound perfectly healed on Sept. 7th.

CASE 2.—The patient, a male, aged 65 years, was admitted to hospital on May 24th, 1906. In the year 1900 this man suffered from an umbilical hernia; this was operated upon in June of that year and the operation was followed by suppuration. Such an occurrence is always in my experience followed by relapse; it was so in this case. Two years later he returned to the hospital with a small ventral hernia to the right of the scar; he had also at this time a fairly large scrotal hernia, the contents of which were irreducible, being apparently adherent to the sac wall. The scrotal hernia, about which he had not previously complained, he now declared had been present for 20 years; its length from the external ring to the lowest point of the scrotum was 11 inches; its circumference 20 inches. The skin over it was pigmented but not thickened. On March 6th, 1902, the ventral hernia was dissected out; there were two medium-sized sacs with fascial openings, each of the size of a shilling, lying side by side in the line of the scar with a narrow fascial bridge between; after removal of the peritoneal sacs and closure of their openings, the fascia on the left was cleaned from fat for a quarter of an inch and then the peritoneo-fascial layer on the right side was brought over this and united to it by mattress sutures; the skin was then united over all. In 13 days the external sutures were removed; primary union had taken place. Six days later the scrotal hernia was operated upon; the scrotum contained large intestine which was closely adherent to the sac wall. After reduction the opening in the abdominal wall extended the whole length of the inguinal canal; the peritoneal sac was twisted, ligatured, its excess cut away, and the stump carried upwards to a point one inch higher up on the interior of the abdominal wall and fixed there; then the conjoined tendon was drawn down to Poupart's ligament and united to it by several silk mattress sutures. A drainage-tube was drawn through an opening made at the lowest point of the scrotum and another was placed at the upper and outer angle of the inguinal wound; the skin wound was then closed and sealed with celloidin. There was a large amount of ecchymosis of the scrotal tissues and this broke down later. The deeper union remained firm, but the interior of the scrotum sloughed, requiring reopening throughout. The testis on this side necrosed and was removed. Ultimately two months after the operation the whole was soundly healed.

The patient returned to hospital on May 20th, 1906, with a moderate-sized ventral hernia in the line of the old ventral scar; this, he said, had shown itself within two or three weeks after leaving the hospital and had been gradually increasing since. A double opening was found in the muscular wall; these openings were each of about the size of a five-shilling piece and were separated by a strand of fibrous tissue; this was divided and the two openings were thrown into one. The cavities were filled by non-adherent small intestine which was easily reduced. The man was very stout and the tension of the muscular wall was great. It was evident that an endeavour to bring the edges of the opening together laterally would fail or, if it were possible, that they could not be made to overlap; the tension upon the sutures would be such that they would almost certainly cut out and the hernia return worse than before. There was some enteroptosis and it was thought that approximation of the edges from below upwards would not only be much easier, since the sutures so applied would not have to counteract the lateral pull of the oblique and transversales muscles, but that their application in this direction might do something to improve the tendency to falling forward and downward of the abdominal contents. The sutures were accordingly introduced in this manner with the best results; not only was a firm and extensive union obtained, but the abdominal wall lost its pendulous appearance and the man himself was much more comfortable. The wound was completely healed by the tenth day and there have been no signs of relapse; on putting the abdominal muscles into action the scar retracts firmly.

Remarks by Mr. STANMORE BISHOP.—The method of closing a ventral hernia detailed above may or may not be original; it is probable that it is not, but I have not seen it previously described; many of the cases which have come under my own observation have occurred in stout persons in whom the intra-abdominal tension has been great; the endeavour to bring the muscular walls together from side to side is in such cases resisted not only by the contraction of the lateral muscles but by the shortening which always takes place in muscles which have been accustomed to symmetrical resistance as the obliques and transversales are when that resistance no longer exists; if the attempt to bring them together succeeds there ensues for such patients, after their recovery from the anæsthetic, a period of much discomfort; I have seen such patients strain violently for some days; I have often thought also that sickness and retching were much more marked and it seems probable that it must require some time for the stomach and intestines to become accustomed to the decreased space at their command; in this and in another case of which I have notes, treated by closing the opening by sutures applied from below upwards, these symptoms were conspicuous by their absence, the resulting scar, not being dragged upon during the plastic stage, is also much less likely to yield again and therefore relapses are not so much to be feared. In both cases a pendulous abdomen coexisted; the effect in lifting up the lower segment was markedly beneficial.

The first case is reported because it is the largest ventral hernia I have ever seen; at the operation half the abdominal contents were outside the true abdominal wall.

BRADFORD ROYAL INFIRMARY.

TWO CASES OF PURPURA HÆMORRHAGICA, ONE WITH A PECULIAR RETINAL CONDITION; AND A CASE OF BANTI'S DISEASE TREATED BY THE X RAYS.

(Under the care of Dr. R. H. CROWLEY, Dr. R. HONEYBURNE, and Dr. H. J. CAMPBELL.)

FOR the notes of the cases we are indebted to Dr. A. W. Falconer, late house physician.

CASE 1.—The patient, a female, aged 22 years, was admitted into the Bradford Royal Infirmary under the care of Dr. R. H. Crowley on April 3rd, 1906. Three weeks before admission she began to have pain in her joints and muscles. She attended as an out-patient and thought that she was getting better until the day of admission when she had violent epistaxis lasting the whole day, which was only stopped by plugging. She had no abdominal pain and her bowels were regular. On admission the temperature was 102·6° F., the pulse was 120, and the respirations were 28. The patient was a fairly nourished but intensely anæmic girl, the mucous membranes being almost colourless. There were two or three small glands of about the size of peas in the left inguinal region and one or two in the left axilla. There was no rash. A hæmic bruit could be heard at the apex; *nil* in lungs. The liver and splenic dulness were normal. The abdomen was slightly full; there was no tenderness. The optic discs were very pale and the vessels were small. There were no hæmorrhages. Blood examination showed: hæmoglobin, 20 per cent.; white cells, 12,500 per cubic millimetre; and red cells, 1,098,000 per cubic millimetre (see table). On the 5th there had been considerable hæmorrhage from the gums round the roots of all the upper teeth. There was no ulceration of the gums, though they looked soft and sodden. The breath was very offensive. On the left thigh was one large suggillation about two inches by half an inch. The fundi oculorum were normal. On the 6th the temperature was 101°. There was still slight epistaxis. On the dorsum of the left foot there was a discolouration of the skin evidently due to deep hæmorrhage. A few of the cervical glands on the left side were as large as peas. As regards the fundi oculorum, in the left macular region there were several small irregularly shaped patches. They were greyish white in colour, were not raised, and the largest of them was about one-sixth of the diameter of the disc. There was no sign of hæmorrhage. On the 7th there was a small hæmorrhage in the left fundus below the disc. The spleen was now distinctly palpable. On the 8th the white patches were present

in both macular regions. On the 10th the temperature was 101·4°. The spleen had not enlarged since the last note was made. The glands in the posterior cervical region on the left side were now very numerous and of about the size of peas. There were small hæmorrhages in both fundi. On the 15th there was fresh hæmorrhage from the gums. The temperature since the last note had ranged from 101° to 103°. On the 23rd blood from the median basilic vein was cultivated on bouillon with a negative result. On May 1st the patient's general condition had much improved since the last note. The temperature had been running lower and there had been no more hæmorrhages. The cervical glands could no longer be felt; there were still a few palpable glands in both axillæ and in both inguinal regions. The spleen could not now be palpated. On the 15th, as regards the fundi oculorum, the white patches in the macular regions were becoming very much fainter. On June 11th the patient had very much improved. The temperature had been normal for the last ten days. There was no longer any trace of the white spots in the retina. The patient insisted on going out.

Date.	Hæmoglobin, per cent.	Red cells, per cubic millimetre.	White cells, per cubic millimetre.	Polymorphonuclears, per cent.	Lymphocytes, per cent.	Hyalines, per cent.	Eosinophiles, per cent.	Mast cells, per cent.	Myelocytes, per cent.
Case 1.									
4/4/06	20	1,098,000	12,500	70·0	7·0	23·0	—	—	—
5/4/06	20	—	20,312	67·0	7·0	23·0	1·0	2·0	—
6/4/06	—	—	—	79·0	4·0	12·5	1·5	1·0	2·0
11/4/06	20	825,000*	1,250	88·5	7·5	—	0·5	0·5	3·0
15/4/06	23	925,000†	15,625	86·5	3·0	—	2·0	—	8·5
17/4/06	20	740,000†	7,031	91·0	6·0	—	—	—	3·0
1/5/06	23	1,225,000	4,062	72·0	18·6	8·6	0·6	—	—
15/5/06	45	3,600,000	6,150	—	—	—	—	—	—
Case 2.									
17/8/06	75	4,200,000	5,000	—	—	—	—	—	—
19/8/06	—	—	—	44·0	10·5	42·0	3·0	0·5	—
20/8/06	68	—	—	58·0	27·3	12·0	2·0	0·6	—
21/8/06	48	—	—	61·3	19·3	14·6	4·0	0·6	—
22/8/06	48	—	—	69·0	9·0	21·0	1·0	—	—
23/8/06	44	3,000,000	5,368	64·0	14·6	19·3	1·3	—	0·6
24/8/06	35	2,140,000	6,200	77·6	6·0	14·6	—	1·3	0·6
26/8/06	40	2,440,000	10,625	65·0	22·0	12·0	1·0	—	—
5/9/06	40	2,640,000	7,500	44·0	40·0	12·0	3·0	—	1·0
14/9/06	54	—	—	47·3	25·3	22·6	4·5	—	—
20/9/06	52	—	—	48·0	25·0	20·0	6·0	1·0	—
25/9/06	62	3,170,000	5,000	43·0	39·3	14·6	3·0	—	—
9/10/06	72	3,800,000	3,750	48·5	26·5	24·0	1·0	—	—
16/10/06	80	4,200,000	6,000	40·0	34·5	17·5	7·5	0·5	—
17/11/06	100	5,200,000	4,000	36·0	35·0	24·0	5·0	—	—
Case 3.									
11/9/06	40	3,300,000	6,250	—	—	—	—	—	—
21/9/06	40	—	—	56·0	36·0	3·5	3·5	1·0	—
10/10/06	40	—	—	55·3	30·0	12·0	2·6	—	—
31/10/06	35	2,620,000	3,650	53·6	24·3	10·7	8·0	3·5	—

* Large number of normoblasts. † Normoblasts.

CASE 2.—The patient, a female, aged 21 years, was admitted into the Bradford Royal Infirmary under Dr. R. Honeyburne on August 17th, 1906. On the day before admission the patient began to spit blood and continued to do so till admission. On the same day she noticed that she was covered with spots. She had had no pain in her joints or her abdomen. On admission the temperature was 99° F., the pulse was 96, and the respirations were 20. The patient was a well-nourished girl, moderately anæmic. There was a purpuric eruption all over both legs and thighs and to a less extent over the abdomen, chest, and arms. There were also numerous ecchymoses on the legs, some as large as a four-shilling piece. The gums had continued to bleed profusely since admission, the hæmorrhage coming from the bases of all the teeth. There was no sponginess of the gums. There were no palpable glands except a few in the posterior cervical regions. With regard to the abdomen there was no tenderness and the liver and splenic dulness were normal. The heart and lungs were normal. The nervous system was normal, as also were the fundi oculorum. On the 19th the eruption was rather more marked; on the inner side of the left thigh were several large suggillations and over both tibiæ were distinctly raised nodules. There had been slight abdominal pain and the bowels had moved twice on this date, the motions being almost pure red blood. The gums were still bleeding. Cultures from blood taken from the median basilic vein on bouillon remained sterile. On the 20th there was still some hæmorrhage from the gums. On the 21st the hæmorrhage from the gums had again become profuse and the motions had again showed red blood. The patient was much weaker. There were no hæmorrhages in the fundi oculorum. On the 22nd there were profuse hæmaturia and considerable hæmorrhage by the bowel. The temperature, which had hitherto not been above 99°, rose to 102°. On the 24th the patient had had severe hæmatemesis of bright red blood. The hæmaturia still continued, though slight. From 8.30 A.M. she gradually became comatose and lay without taking any notice of anything and could not be roused. There was no paralysis and the corneal reflexes were present. At 8 P.M. the right corneal reflex was brisk but the left was quite absent. The hæmorrhages had stopped. On the 25th the patient was less comatose. There were now marked nystagmus and definite weakness of the left side of the face. On the 27th she was much better. All hæmorrhage had ceased and she was quite conscious. There was weakness of the left side of the face and of the left sixth cranial nerve. There were also marked blurring and some swelling of both optic discs. The temperature was 99°. On the 31st the patient continued to improve. On the previous night there was again a trace of blood in the urine. On Sept. 9th she had had severe abdominal pains and vomiting during the night but no hæmatemesis. On the 24th she again had severe abdominal pains and the temperature rose to 101°. There had been no hæmorrhages. Between this date and the 27th the patient had had a lot of abdominal pain referred to the umbilical region. There had been no vomiting and the bowels had been regular. The temperature was 101°. On Oct. 16th the temperature had been normal since the last note. The optic discs were now normal. There were marked weakness of the left sixth cranial nerve and slight of the left seventh, otherwise there was no paralysis. On Nov. 10th the patient was sent to a convalescent home.

CASE 3.—The patient, a male, aged 25 years, was admitted into the Bradford Royal Infirmary, under the care of Dr. H. J. Campbell, on Sept. 10th, 1906. Twelve months before admission the patient had had severe hæmatemesis, bringing up about a pint of dark blood. He had had no pain before or after. He was laid up for about five weeks, but since then he had had no trouble and had been able to continue at his work until a few days before admission when he had an attack of severe diarrhœa. There was no history of other hæmorrhages. On admission the temperature at night was 100° F., the pulse was 88, and the respirations were 24. He was a poorly nourished man; his mucous membranes were very pale. Over both cheeks and the whole of the forehead there were very darkly pigmented patches with sharp irregular margins. There was no excess of pigmentation elsewhere. There were small glands of about the size of split peas in both inguinal, both axillary regions, and both sides of the neck. With regard to the abdomen there was no tenderness. The liver dulness in the mammary line extended from the sixth rib to the costal margin. The spleen was felt extending downwards and to the right to within one and a half inches of the umbilicus. Its edge was smooth and hard and was not tender. No notch could be felt and it moved freely on respiration. The patient was exposed to the x rays over the splenic region for ten minutes every second day for two months without the slightest benefit. At the beginning of the treatment the blood was as follows: hæmoglobin, 40 per cent; and red cells, 3,300,000 per cubic millimetre; after treatment it was: hæmoglobin, 35 per cent.; and red cells, 2,620,000.

Remarks by Dr. FALCONER.—Although the occurrence of hæmorrhages and optic neuritis is not unusual in purpura hæmorrhagica I can find no record of a case showing white spots without previous hæmorrhages. The occurrence of a relative lymphocytosis which was very marked in Case 2 and at first, so far as the hyaline corpuscles were concerned, in

Case 1, although it was there soon replaced by an ordinary post-hæmorrhagic polymorphonuclear leucocytosis, is unusual, and suggests the possibility that the white patches were of the same nature as those in lymphatic leukæmia which they very closely simulated in appearance.

I am indebted to Dr. Campbell for permission to publish Case 3, to Dr. Crowley for Case 1, and to Dr. Honeyburne for Case 2.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

Discussion on the Diagnosis and Treatment of Laryngeal Cancer.

A MEETING of this society was held on Jan. 28th, Mr. C. A. BALLANCE, the President, being in the chair.

Sir FELIX SEMON opened a discussion on the Diagnosis and Treatment of Laryngeal Cancer. He commenced by referring to the great progress which had been made concerning the diagnosis and treatment of malignant disease of the larynx within the last quarter of a century. It was only by means of early diagnosis that this progress had become possible. He insisted on the diagnostic value of deficiency of movement of a vocal cord from which a suspected growth sprang. He discussed in detail the question of the microscopic examination of intralaryngeally removed fragments of a suspected growth previously to radical operation, and strongly maintained that such microscopic examination should, whenever possible, precede operation. Mere naked-eye examination even by the most experienced observer was very fallacious unless the case was quite advanced. With regard to treatment he entirely rejected intralaryngeal operation and pronounced thyrotomy in early cases of intrinsic laryngeal cancer as the operation *par excellence* for this class of growth. His own experience was founded upon 212 cases of malignant disease of the larynx seen in private practice between October, 1878, and the end of 1906. Of these 136 were intrinsic and 76 were extrinsic or mixed. No less than 177 occurred in men and 35 only in women. He drew special attention to the fact that, whilst the affection was so much more common in men than in women, in the male sex the intrinsic variety, and in the female the extrinsic were disproportionately more frequent, there having been 124 cases of intrinsic and 53 of extrinsic in men against 12 cases of intrinsic and 23 of extrinsic in women. He himself had performed thyrotomy in 34 cases (in one of them the operation had had to be repeated) of real or supposed malignant disease of the larynx. In eight of these the diagnosis had either been shown to be at fault or had remained doubtful. Twice the disease turned out to have been tuberculous and twice of the nature of an infective inflammation, in three cases the diagnosis had remained doubtful, and in one case the growth had turned out to be an innocent papilloma. Three out of these 34 ended by death, giving a percentage of 8·8 fatal results. Of the cases of microscopically verified malignant disease of the larynx, which were 25 altogether, one died and 24 recovered. One of these had been too recently operated upon to be of value for statistical purposes. Out of the remaining 23 cases, genuine local recurrence took place in three cases, giving a percentage of 13·6 recurrence. In one case the patient died from malignant disease of the liver five years after the operation. If this was regarded as a genuine recurrence, the percentage of recurrences would be 17·4. It was, however, considered quite an open question whether this case might not represent a genuine fresh reproduction of malignant new growth. If the question were considered in that light 20 cases would remain in which lasting cure was obtained, or a percentage of exactly 80. These results compared favourably with the results of radical operation for cancer in any part of the body. Out of these 20 cases the cure had lasted over 15 years in one case, in four cases between ten and 15 years, in four between five and ten years, in two over four years, in three over three years, in two over two years, in one just two years, and in one one year and ten months. The reasons were fully stated why in intrinsic cancer of the larynx the one year limit might justly be taken as denoting the critical time during which recurrence might be feared. In 11 of these cases the vocal results were exceedingly good, in five good or fair, and the voice was weak or reduced to a whisper in four. He still adhered to the technique as stated by him in 1894 in THE LANCET,[1] but briefly described another method, different in several essential particulars, recently recommended by Professor Paul von Bruns of Tübingen. Coming next to hemi-laryngectomy, he expressed the view that this operation would become rarer in proportion as the diagnosis of intrinsic cancer of the larynx was earlier arrived at. He firmly believed that it would ultimately be employed only in cases in which the disease had already invaded the thyroid cartilage or in a few exceptionally favourable cases of extrinsic cancer of the larynx. If performed he thought that it would be better to remove the corresponding cervical lymphatic glands, even if these were apparently not diseased. Subhyoid pharyngotomy was briefly alluded to as being only available in a small percentage of cases. He described his own position with regard to the operation of total extirpation of the larynx as one equi-distant from prejudiced antagonism and from injudicious adulation. He unconditionally admitted the legitimacy of the operation and gladly registered the great diminution of the formerly terrible mortality, nor did he doubt that a few of the patients who had survived the operation for any length of time had been, and were, quite content with their lot. On the other hand, from what he had seen himself, in the majority of these cases life was usually extremely sad and in a very large proportion recurrence took place only too soon. He urgently asked for trustworthy statistics concerning this last-named question and strongly protested against total laryngectomy being undertaken where milder measures were sufficient. In conclusion, he pleaded again for early recognition of the disease in cases of intrinsic cancer of the larynx, by which alone the operator was able to effect a cure by means of simple thyrotomy, a less serious operation which left the patient much less disabled from leading a useful and comfortable existence. It might be possible some day to employ other means than the knife in these cases.

Mr. H. T. BUTLIN submitted an analysis of the results of operations he had performed for malignant disease of the larynx on 35 patients during the last 20 years. Nine of these patients had been operated upon prior to 1890 (seven by thyrotomy, one by infrahyoid laryngotomy, and one by hemi-laryngectomy) and of these three had died from the operation, three from recurrence of the disease, one from some other disease five years later, and two had remained well after three years, giving a total of three successes (33 per cent.) as judged by the three years limit. The system of after-treatment adopted was of great importance and Mr. Butlin had divided his cases by this date on that account. Since 1890 he had introduced three important modifications into the after-treatment: (1) Hahn's feeding-tube was removed immediately after the operation instead of being left in for two or three days as formerly; (2) the patient was kept in the prone position with the head bent forward so as to avoid discharges running into the trachea; and (3) the patient was made to take liquid food like a dog or a horse with his head hanging over the edge of the bed, so that fluid passing into the trachea readily passed out again. Since 1890 Mr. Butlin had operated on 26 patients (21 by thyrotomy, one by hemi-laryngectomy, and four by laryngectomy). Of these, two had died from the operation, four had died from local recurrence, and one from cancer of the tongue; one had been lost sight of. In two of these patients local recurrence had occurred and 17 had continued well for three years and upwards, giving 65·4 per cent. successes based on the three years' limit. While endorsing Sir Felix Semon's preference for thyrotomy, Mr. Butlin could not help thinking Sir Felix Semon had drawn rather too gloomy a picture of the after-condition of a case of total extirpation (laryngectomy). Speaking of the difficulty in diagnosing malignant disease of the larynx, Mr. Butlin confirmed the desirability of removing a fragment for examination and he did not share the fears that had been expressed by different observers as to the danger of a spread of the growth thereby.

Mr. S. G. SHATTOCK submitted that in the matter of the preliminary histological diagnosis of laryngeal lesions the responsibility lay rather with the operator than the histologist. The positive histological diagnosis of carcinoma presented with few exceptions no difficulty. The result practically depended upon whether the piece of tissue removed by exploratory endolaryngeal operation was really a portion of the lesion or not. The histological diagnosis,

[1] THE LANCET, Dec. 29th, 1894, p. 1532.

however, might be difficult or impossible in the case of a papilloma in which a carcinomatous change had supervened and especially if the latter change had affected part only of the growth. In the case of ulcerating sarcoma, likewise, the differential diagnosis from granuloma might be impossible should the piece removed consist only of a superficial fragment which was the seat of infective inflammation. Intrinsic sarcoma of the larynx, however, was practically an unknown disease. The method of immediate histological diagnosis proposed by Mr. Butlin in the case of the tongue was inapplicable to the larynx; it was impossible to obtain a scraping from the floor of an ulcer *in situ* in order to determine whether it consisted of epithelial cells or otherwise. A piece of the lesion must be removed. As this was done without the use of a general anæsthetic the methods for making an immediate diagnosis, in order that the question of a radical operation might be determined on the spot, were not needed. For the making of an immediate diagnosis (should it be required) the fragment of tissue was too precious to risk the method of teasing; it must be cut into microscopic sections. The tissue could be cut on the freezing microtome in the fresh, unfixed state, though sections so made tended to open out in water and were not easily manipulated. The method of placing the tissue in a small beaker of distilled water and raising the latter to boiling point, after which it could be dipped into gum and cut at once on the freezing microtome, was not satisfactory; the picture was blurred. The most satisfactory method devised was to use a 10 per cent. formol solution in place of plain water in which to boil the tissue. When an immediate diagnosis was not requisite the material could be fixed in salt-formol or alcohol and acetic acid or potassium bichromate and acetic acid, and cut for diagnosis within 48 hours or less. Mr. Shattock preferred the freezing method to paraffin in such cases, for the reason that the orientation of the fragment was of the greatest importance, and on the freezing microtome this could be exactly insured; moreover, in the cut surface of the frozen block the limits of the epithelium, normal and morbid, could be accurately mapped out with the naked eye. In regard to the danger of a local inoculation from an endolaryngeal exploratory operation, this was a real one, should the cutting instrument pass through healthy tissue after traversing the diseased. The danger, however, was of no practical moment, for if a piece of the growth was so removed its nature would be diagnosed and a radical operation would be carried out before time elapsed for any inoculation growth to arise. To attempt the complete removal of a laryngeal carcinoma by a series of endolaryngeal operations only was unsurgical because unscientific and in this country the method was happily quite obsolete. The danger of setting up distant metastasis by an exploratory removal of tissue, he thought, must be extremely remote and could only arise were extensive and violent injury inflicted upon the contiguous structures. He could recall only one instance in which besides a rapid local infection, distal metatasis seemed accentuated by an exploratory operation. The case was one of subperiosteal osteoid sarcoma of the radius which was thought to be an inflammatory enlargement associated with necrosis. The swelling was incised and explored. A rapid local extension of the growth ensued and after death some of the pulmonary metatases found were of recent origin as though due more immediately to the exploratory operation. Such a disturbance of parts was altogether exceptional. No endolaryngeal exploration would be attended with such damage. The chief point raised by Sir Felix Semon, however, was the utility of such preliminary histological examinations. In the case of tumour-like formations of doubtful kind in other positions the practice was a recognised one, and at times it proved of the highest value. But Sir Felix Semon went further; he would apply it in all. To take the case of a neighbouring organ, the tongue, the diagnosis of carcinoma was made, in most cases, from the history and clinical characters. Now and then, even in the hands of the most experienced clinicians, a mistake would arise. And yet there was a certain palliation for the radical operation carried out upon such a mistake; for it was usually true that the lesion taken for a carcinoma was an ichthyosis, with papillary upgrowth, or a leucoplakia, conditions that not infrequently preceded the growth of a carcinoma. That was a matter not touched upon by Sir Felix Semon—the prophylactic surgery of malignant disease. They vaccinated against small-pox; why not operate against carcinoma? But even if this principle was allowed in the case of the larynx there would still be a small residue of cases in which the proper method of treatment could be determined only by a preliminary histological diagnosis and it was for the sake of these that Sir Felix Semon would have all examined. The proposition compelled admiration but it was a counsel of perfection and like such it would be practised only by the few.

Dr. R. MCKENZIE JOHNSTON (Edinburgh) referred to the case of a man, about 50 years of age, who was present at the meeting and who had been operated on 20 months before. Dr. Johnston advocated a preliminary investigation in all cases.

Dr. R. H. SCANES SPICER referred to cases of cancer of the mouth and throat treated by vaccine of bacillus neoformans. Several of these cases were entirely inoperable. Two of these cases, which had been under treatment since March, had made a very notable improvement. One patient was 78 years of age; his weight had improved, the ulcerated surface had become cleaner, and the increase of the growth had been checked.

Dr. HERBERT TILLEY, speaking of the diagnosis, referred to two cases of cancer which were diagnosed as chronic laryngitis, and the cancerous condition had made rapid progress under the escharotic treatment adopted. In cases of suspected malignancy it was most important that the larynx should not be irritated by caustic applications. He had operated on eight cases and he laid stress on thorough scaling of the teeth and rendering the mouth thoroughly aseptic before operation.

Sir FELIX SEMON, in reply, mentioned that it was not always possible without undue violence to remove fragments for examination, but he urged that it should always be done when possible.

CLINICAL SOCIETY OF LONDON.

Exhibition of Cases.

A MEETING of this society was held on Jan. 25th, Mr. H. H. CLUTTON, the President, being in the chair.

Dr. SEYMOUR TAYLOR exhibited a case of Acromegaly. The patient, a woman, aged 32 years, had suffered from increase in size in her hands and feet for about five years. The face was very large, the angle of the lower jaw was obtuse, the lips were pendulous, the ribs and clavicles were enlarged, and the case was otherwise typical in all respects. Her chief discomfort was dyspnœa on lying down at night. Treatment by pituitary extract had yielded negative results.

Dr. F. PARKES WEBER showed a case of Congenital Heart Disease with Cyanosis. The patient was a girl, aged 17 years. When she lay on her back a harsh systolic murmur could be heard all over the heart, but when she stood upright the murmur almost completely disappeared or became much fainter and markedly influenced by the respiratory movements, being best heard during inspiration.

Mr. J. R. LUNN showed a case of Fracture of the Tarsus, occurring in a man, aged 22 years. Some doubtful crepitus could be felt on admission on May 2nd. He stated that he had jumped a depth of 15 feet, landing on his left foot. The x rays revealed a fracture of the astragalus and a piece of the bone was projecting on the dorsum of the foot. The foot and ankle were put up in a plaster-of-Paris splint which was removed on June 10th, when there was good movement of the ankle. The patient was discharged on July 15th walking well.

Mr. LUNN also showed a case of Achondroplasia. The patient was a man, aged 53 years, 4 feet 1 inch in height. The forehead was prominent, the bridge of the nose was rather deficient, and the eyes were deeply set. The legs were very bowed, there being great curvature of the tibiæ. The feet were short and square, with all the toes of nearly the same length. There was very little curvature of the bones of the upper limbs. The fingers were more nearly of the same length than normal. The middle and ring fingers diverged at the first interphalangeal joint. The intellect was good.—Dr. R. SCANES SPICER spoke of the cases of achondroplasia that came to the laryngologist with the diagnosis of adenoids on account of the depressed nose and peculiar facial features.

Dr. BERTRAM L. ABRAHAMS showed an unusual case of Enlargement of the Head in a male child, aged three years. Nothing wrong was noticed with regard to the head until the age of eight months. It then began to swell and continued

to do so for some four months. Dilatation of the vessels at the root of the nose was first noticed at 18 months and progressed since. The child was at present intelligent and well developed. The head was very large, bulging particularly above and to the back; the greatest circumference was 25 inches. On auscultation a systolic bruit was heard all over the head. The right fronto-parietal fissure was closed, but the left, the frontal portion of the sagittal, and both coronal fissures were patent. The left occipito-parietal region was larger than the right. There was venous dilatation over the glabella, involving the left upper eyelid, and descending to within three-quarters of an inch of the tip of the nose. The appearance simulated that of a cirsoid aneurysm. There was no other abnormal physical sign excepting a systolic bruit over the whole præcordia, loudest in the mitral area, and conducted into the axilla.—Dr. WILLIAM EWART pointed out that the head was not of a hydrocephalic shape, as it retained the normal form.

Mr. H. L. BARNARD showed a case of Successful Plastic Operation for a Syphilitic Perforation of the Hard Palate on the left side of the size of a sixpence. The patient was a man, aged 28 years. The perforation had been present six months. On August 16th, 1906, an -shaped flap was turned in from the right side of the palate and sutured to the freshened edges of the perforation. The flap was about three times the area of the perforation. Healing occurred well. Mr. Barnard remarked that the experience of modern rhinologists controverted the older views about the tendency of such operation wounds not to heal.—Mr. W. G. SPENCER thought that the truth lay between the two extremes and that they could not always expect good results. He described a method that had proved very successful in his experience.—Mr. CHARTERS J. SYMONDS described a modification of the operation. He was sure the results were much better than was previously considered to be the case. However, some forms gave very bad results; such were those in which the alveolar plate was destroyed and those in which the perforation was situate in the soft palate.

Mr. BARNARD also showed a case of Removal of a Stone from each Ureter for Double Pyonephrosis. The patient, a woman, aged 41 years, had had renal colic on both sides, but chiefly on the left, for four years and attacks of cystitis and pyrexia for three years. The radiographic report showed: (1) a stone of the shape and size of an almond in the right ureter opposite the fourth lumbar vertebra; and (2) another, smaller, in the pelvis opposite the fourth sacral vertebra. On Oct. 14th, 1904, the right ureteric calculus was removed through a lumbar incision. The wound in the ureter was closed with catgut. On Dec. 5th, 1904, the left ureteric calculus was removed through an incision in the left fornix of the vagina. The ureter was not sutured. The urinary fistula closed in ten days. The patient was at present well and strong and weighed 9 stones 10½ pounds. The urine was slightly turbid, contained pus, and was acid.—Mr. SPENCER discussed the difficulty of closing the ureter through the vagina.—Mr. BARNARD, in reply, mentioned a case in which the ureter had been pulled down with a hook into the vagina and the opening in it closed. It was important in such an event to use catgut, for it had been found that if silk were used another stone often formed at the site of the ligature. Replying to a question asked by Mr. C. H. FAGGE he said that he had not employed the separator in this case.

Mr. BARNARD also showed a case illustrating a Method of Diminishing the Raw Surface after Removal of Half the Tongue. The patient was a woman, aged 55 years. The right half of the tongue was removed by Whitehead's method. The remaining half of the tongue was doubled back so that the tip was brought in contact with the posterior third. Three catgut sutures were inserted. The advantages of this method were: (1) rapid healing and diminished raw surface; (2) smooth and rounded edge to the tongue; and (3) small scar. The disadvantages were: (1) local recurrence, if it occurred, would be in the middle of the tongue; and (2) the sensation of the tip of the tongue being referred to the throat. The last symptom had disappeared in this case.—The PRESIDENT said that he had employed this method for 23 years and was satisfied with the results thus obtained. Unfortunately, it was rare to get cases early enough for the operation to be suitable for them.—Mr. C. B. KEETLEY remarked that an additional advantage of the operation was the diminished tendency to recurrence. The sooner and better a wound healed the less was the chance of recurrence.—Mr. CHARTERS SYMONDS said that he usually employed the method of stitching the edge of the wound to the mucous membrane on the dorsum of the tongue.

Mr. BARNARD also showed a Prostatic Knife for Incising the Floor of the Bladder in total Suprapubic Enucleation of the Prostate. The knife was similar to an adenoid finger curette but terminated in a blunt rounded blade. It fitted on the index finger. This was one method of overcoming the difficulty of cutting on the prostate whilst two fingers of one hand were in the rectum.

Mr. FAGGE showed a case of Carcinoma of the Jejunum; Obstruction; Resection of a Piece of the Jejunum and adherent Transverse Colon; Double Lateral Anastomosis with Murphy's Buttons. The patient, a woman, aged 33 years, was now quite well, 13 months after the operation. The buttons were both passed within six weeks of the operation.—Mr. FAGGE, in reply to Mr. RAYMOND JOHNSON, said that microscopically the growth proved to be a columnar cell carcinoma, with an unusually great amount of fibrous tissue.

Mr. F. W. BROOK showed a case of Multiple Chondromata of the Metatarsal Bones and the First Intermetatarsal Space occurring in a male, aged 50 years. 15 years ago the right "great toe joint" was crushed. This was followed by occasional painless swelling which in the course of a few years became permanent. He was first seen in February, 1904, when the condition differed from that now presented in the following respects. The general swelling was less and not so tense. The calcareous or cartilaginous deposits about the bone were more moveable and the outline of the more superficial ones, which was irregular, was easily recognised. The movements of the joints were scarcely impaired. In the more recent skiagram as compared with the earlier one were seen (1) the increasing amount of the calcareous or cartilaginous deposit in the tissues of, and further widening of, the first interspace, and increasing distortion of the second metatarsal bone; (2) the slow but progressive destruction of the first metatarsal bone; and (3) the appearance of chondromata in the other metatarsals. One of the isolated growths, about half an inch in diameter, was recently removed from the web of the interspace. It was not encapsuled and upon examination by Mr. S. G. Shattock was reported to consist of hyaline cartilage in which small areas of mucous metaplasia occurred.—Mr. BARNARD queried whether the growths might have originated in the tendon sheath.

ROYAL ACADEMY OF MEDICINE IN IRELAND.—A meeting of the Section of Pathology was held on Jan. 4th, Dr. J. F. O'Carroll, the President of the section, being in the chair.—Professor E. J. McWeeney, through Dr. Farnan, exhibited specimens of Uncinaria Duodenalis sent to him by Dr. Christian William Branch, Government medical officer at St. Vincent in the West Indies, where the parasite caused much illness. The exhibit consisted of the washings of the intestine of a child. Two sorts of worms were present—namely, trichocephalus dispar in large tufted masses and uncinaria duodenalis (ankylostoma duodenale). The male and female trichocephalus were very different. The male and female uncinaria were not very unlike each other, the male, however, being the smaller. One measured 7·5 millimetres long by 0·47 millimetre thick. Its remarkable copulatory organ consisted of two spicules, beautifully striated when seen under a high power, surrounded by a sort of umbrella-like arrangement supported by 11 ribs. The female was longer and thicker than the male. One female that was measured was 17 millimetres long. A new species of uncinaria, called uncinaria Americana, parasitic in man, was described in 1902 by Stiles, and is now made into a new genus called necator. It occurs in the same locality as uncinaria duodenalis and does a great amount of mischief, especially to children, causing retardation of development, anæmia, and cachexia. In Europe the parasite chiefly attacked miners and attention was first called to it in connexion with the boring of the St. Gothard tunnel in Switzerland in 1880, when it caused a serious outbreak of "pernicious" anæmia amongst the workmen.—The President described a case of Suffocative Hydrothorax in which the Pleuræ were tapped several hundred times. The patient was a robust and intelligent man, 65 years of age, who entered a hospital in May, 1900, suffering from great distress in breathing and epigastric pain. There were considerable swelling and tenderness in the epigastrium. The urine, small in quantity and dark in colour, contained some sugar. There was a faint systolic apex murmur, together with some dulness in both pleuræ. A month afterwards the right pleural cavity was tapped and 40 ounces of fluid were withdrawn. Two days later the left pleural cavity

was tapped, 76 ounces being withdrawn. Occasionally, as might have been expected, there was a trace of albumin in the urine. A slight purplish tinge was visible through the patient's natural ruddiness and the veins in his neck were slightly more prominent than they would ordinarily have been. He had also at first some œdema of the legs. During the first four or five months the two pleuræ were tapped almost alternately. Thereafter the right one was tapped about twice for every time the left was tapped and this proportion was maintained till March, 1902, when the left pleural cavity ceased to secrete as the result of an adhesive pleuritis. He had then to be tapped twice as often on the right side, and this went on, practically every second day, to the amount of 50, and 60, and 70 ounces till the beginning of May, 1903, almost three years after his admission. Then the right pleura began to show signs of not yielding as much fluid as formerly and of being annihilated by adhesive pleuritis of rapid course. He died when this was complete, practically as if he had been garotted in such a way as to stop the venous flow into the heart without obstructing the trachea, the process lasting about two days. He had spent three years all but five days in hospital, had hardly lain down in bed for more than two or three hours nightly all that time, but had retained his original weight, appearance, and good spirits up to the closure of the right pleural cavity three days before death. At the necropsy, when the heart was examined and the vena cava superior was slit up, a prominence in the posterior wall of the vena cava was noticed. This was an aggregation of tuberculous glands of no great bulk; but the real mischief was caused by an actual fusion of the gland mass with the wall of the vena azygos, the girth of which at this point was half that immediately to the right of it. The total amount of fluid withdrawn during the three years was computed to weigh about three-quarters of a ton.—Dr. F. C. Martley instanced a case bearing some similarity to that described by the President.—Dr. Thomas G. Moorhead exhibited a specimen obtained after the Talma-Morison Operation. The patient, who was a woman aged 22 years, was admitted to a hospital in April, 1906, suffering from ascites which had developed in a couple of days. After tapping an operation was decided upon. The liver was found to be enlarged, firm, and hard. The surface was scraped and the great omentum was stitched to the abdominal wall. After the operation the patient was tapped at intervals of 10 days—200 ounces of ordinary ascitic fluid being withdrawn. About two months ago she began to lose weight. It was decided to see what could be done to establish a permanent drain to the peritoneum but no improvement took place and the patient afterwards died. The interest of the specimen was in showing the results of a Talma-Morison operation six months after its performance. At the necropsy adhesions across the anterior abdominal wall were found and along these could be seen the development of new superficial veins, chiefly between the two peritoneal surfaces. The operation was therefore partially successful in causing the hoped-for establishment of new collateral channels. That it was not more successful was probably due to the fact that the patient, in addition to cirrhosis, had a nutmeg liver. In most cases of cirrhosis some alcoholic history could be obtained. This patient, however, had been a teetotaler all her life, but on inquiry it was found that part of her occupation was the putting of photographic negatives into methylated spirit, which might have something to do with the case.—Dr. William Wheeler instanced a case in which, after finding an enlarged liver roughened on the surface, he performed a Talma-Morison operation. That was two years ago. The patient was tapped once after the operation but never since. He had been extremely well and had gained three or four stones in weight. The other day he came to show himself; no tapping was required, but on examination the urine showed a good deal of albumin, giving signs of a cirrhosis of the kidneys. In 90 per cent. of the cases in which there were no complications ascites was got rid of by the Talma-Morison operation.—Dr. Henry Earl said that an alcoholic history was out of the question in many cases of cirrhosis, such as cirrhosis occurring in children. A great number of the patients met with in hospital practice drank all they could get, and if cirrhosis of the liver had any intimate connexion with alcoholic indulgence it should be one of the commonest affections, which it was not by any means.——A meeting of the Section of Surgery was held on Jan. 11th, Mr. H. R. Swanzy, the President, being in the chair.—Mr. L. G. Gunn made a communication on the Treatment of Enlarged Prostate. He said that, in his opinion, too much attention was paid to the operative treatment of this affection. As many cases could be greatly benefited, though not actually restored to health, by non-operative treatment, it was well to consider this before advising a patient to have the gland removed. Mr. Gunn then gave a brief account of work which he had seen at Paris, London, and Berlin. In the first city prostatectomy was hardly ever performed, in London it was always advised, while in Berlin palliative measures were often used. He then gave a short account of 41 cases of enlarged prostate which he had treated. Of these cases 11 had required operation; nine had made good recoveries, and two had died. 19 cases had been treated by palliative means with more or less relief. None of these had to use a catheter, as Mr. Gunn believed that the risks of catheter life must be always greater than the risk of an operation.—Dr. J. Walton Browne said that much good could be done by washing out the bladder.—Mr. C. A. K. Ball expressed the view that a large number of cases had been operated on in the past which, no doubt, would have lived, and, perhaps, in a more comfortable state, had palliative measures been tried instead of operation. He thought that palliative measures ought to be employed unless there was absolute obstruction to the flow of urine.—Mr. Alexander Blaney said that many cases which had ended fatally after operation would probably have been successful had radical measures been carried out earlier.—Mr. S. Horace Law described an Early Case of Leontiasis Ossea occurring in a boy. When Mr. Law first saw him four years ago he was 12 years old, small for his age, but upright and sturdy. He seemed to be in good general health and his only complaint was of nasal obstruction. On examination a hard bilateral growth was seen in the infra-orbital region, extending up in such a way as to cause the eyes to be pushed outwards and also to bring about exophthalmos. The lateral walls of the nose were pushed towards the middle line so as to occlude the nostrils, though a probe could be passed up to the sphenoid bone and air could be blown through the nose. The naso-pharynx was not involved. The pharynx and palate were normal. The antra of Highmore were dark to transillumination and when an ordinary antrum drill was passed in through the canine fossa on the right side it failed to reach a cavity. The bone was soft and spongy. In November, 1906, the peculiar enlargement due to the disease was well marked. The patient had dacryocystitis on both sides. X ray photographs showed dense shadows corresponding to the obvious growths and a shadow of growth lying between the orbits. The cranial vault of this youth was of about the same thickness as in an adult.—The President said that he regarded the dacryocystitis not as a coincidence but rather as the direct result of the bony growth. He thought that the best mode of treatment would be extirpation of the lacrymal sac on each side, as, in existing circumstances, ulceration of the cornea of a very intractable type would be likely to occur.

SOCIETY FOR THE STUDY OF DISEASE IN CHILDREN.—A meeting of this society was held on Jan. 18th, Mr. G. Pernet being in the chair.—A paper was read by Dr. C. O. Hawthorne entitled "Protection of Rheumatic Children," in which he asked whether anything could be done to prevent or to limit the occurrence of cardiac disease in children who were known to be liable to such disease as a result of a rheumatic inheritance or proclivity, irreparable damage being frequently inflicted on the cardiac tissues by the rheumatic poison almost or altogether apart from incidents popularly recognised as rheumatic. The disproportionate frequency of heart disease in children might be due to the absence of arthritis in them and therefore there was less tendency to keep the patient at rest. It was necessary to educate the public as to the value of rest, and when this was done there might be a diminution in the incidence of heart disease in early life with its diminished usefulness of the individual.—Mr. J. P. Lockhart Mummery read a paper on Volvulus of the Small intestine round a caseous Mesenteric Gland. It occurred in a boy, aged seven years, with symptoms resembling appendicitis. Operation showed a complicated volvulus of the ileum close to the cæcum, which was gangrenous and on the point of giving way in several places. This was resected and the cut ends were united with Murphy's button. The case resembled appendicitis, the classical symptoms of acute obstruction of

the small intestine being not at all prominent. Vomiting was a marked feature early but had ceased when the child went to the hospital and was never fæcal. There was no distension of the abdomen.—Dr. Hawthorne showed: (1) A case of Dilatation of the Stomach of doubtful causation in a boy, aged 12 years; and (2) a patient showing the result of an operation for Extreme Depression of the Frontal Bone.—Dr. Edmund Cautley showed a girl, aged nine years, with Diabetes Insipidus. For two years she had had nocturnal enuresis and for six months enuresis diurna also, with thirst and excessive appetite. The urine varied from 46 to 262 ounces per day, was pale, acid, of specific gravity 1005 and contained from 0·5 to 0·9 per cent. of urea. Adrenalin and atropine had effected no improvement but valerianate of iron and quinine with strychnine were more successful, the polyuria and thirst diminishing and the patient gaining weight. There was no exciting cause discovered and there was no sign of chronic interstitial nephritis.—Dr. F. J. Poynton showed: 1. A case of Premature Development in a child aged two and a half years. The remarkable growth began when the child was a year old, pubic hairs and sexual development being then noted. The weight was now 3 stones 1 pound. The circumference of the head was 20 inches; of the thorax, 22½ inches; and of the abdomen, 23 inches. The length of the whole arm was 12 inches and of the leg 17 inches. The voice was deep and memory was good. The aspect was rather suggestive of acromegaly. There was no suprarenal tumour to be felt. The parents were small and healthy. 2. A case of Friedreich's Disease (?) in a girl, aged nine years. Five years ago the child had measles with severe cerebral symptoms and had not been well since. She had now well-marked ataxy of the legs and incoördination with tremor of the hands. There was doubtful nystagmus. The knee-jerks were abolished. The right plantar reflex was extensor, but the left was flexor in type. There was some lordosis of the upper dorsal spine. Double pes cavus was present. The speech was slow. There were no optic changes.—Dr. G. Carpenter showed a case of Œdema in an infant who was 14 months old and weighed 7 pounds; the œdema of the face and limbs followed an attack of diarrhœa. The child was anæmic and the temperature was subnormal. The urine contained no albumin. —Mr. Lockhart Mummery showed a case of Webbed Penis. The penis was inclosed within the scrotal skin right down to the tip; there were no other abnormality and no history of similar defects in the family.—Dr. G. A. Sutherland showed: 1. A case of Congenital Cerebellar Ataxy (?). The patient, a boy, aged three years, had suffered from general ataxy for 18 months. He was healthy at birth but had convulsions at the age of six months. At the age of two years he was unable to sit or stand without support and the limbs were tremulous and ataxic. The speech and intelligence were very backward. The knee-jerks were very active. There was double internal squint and the optic discs were pale but not definitely atrophic. The condition had remained the same for the past nine months, except that now the child could sit unsupported. Dr. Sutherland thought it probable that the case was one of birth palsy following meningeal hæmorrhage and probably involving the cerebellum. 2. A case of Congenital Deformities of the so-called Mongolian type of Amentia. The patient, a girl, aged eight years, showed the shortening and curving of the little fingers and the oblique palpebral fissures so characteristic of Mongolian imbecility; but the patient was perfectly intelligent and had no cranial deformities. She was under treatment for fibroid phthisis.

INCORPORATED SOCIETY OF MEDICAL OFFICERS OF HEALTH.—A meeting of this society was held in London on Jan. 11th, when Dr. D. S. Davies, the medical officer of health of Bristol and President of the society, delivered his presidential address, dealing mainly with some points in the life history of two of the commoner communicable diseases. Commencing with the subject of diphtheria, he said that this disease was more or less endemically prevalent in all large towns, but the periods of fatal prevalence recurred not after the manner of measles at fairly constant and somewhat short intervals, but at long and uncertain intervals after a prolonged period of comparative, and often remarkable, quiescence. The progress of an epidemic appeared to follow a course, determined partly by the virulence of the type introduced and partly by the resistances of the individuals attacked. During the first months the introduced infection was somewhat limited in distribution and at this stage hospitals might prove of far greater service in prevention than later. The essential towards prevention was an efficient organisation for the bacteriological examination of throats and noses in all "contacts," whether members of an infected household or class-mates in an infected school. There was no antagonism between scarlet fever, measles, and diphtheria; if anything, one predisposed to the other. The largest number of mixed infections were of diphtheria upon scarlet fever. School examination of "contacts" in infected classes was a more rational procedure in urban communities than mere school exclusion without such examination, and if there was sufficient staff available to carry this out promptly and thoroughly there was little risk to the children; but it must be remembered that there might be home "contacts" who had to be sought for and dealt with also. The difficulty met with in London owing to the inaction of certain authorities had not been felt at Bristol, as the whole of the work of school visitation and examination had had, in default of any education medical officer, to be carried out by the health department. Speaking next of small-pox, Dr. Davies said that this disease, in spite of its high infectivity, was comparatively easy to control. In common with the majority of the common communicable fevers, the spread of this disease was for the most part immediately personal. A patient either definitely had, or had not, small-pox at any particular time; he never merely carried it on his living tissues in an inert, but to others a potentially infective form. Hence hospital isolation with protection of "contacts" was generally successful in this disease. The control of small-pox from introduced centres depended on a careful personal search for "contacts," and the use of experience and judgment in looking for them in the right place. In the evening the annual dinner was held at the Holborn Restaurant, the chair being taken by Dr. Davies, and among others present were Mr. Colston Wintle, Colonel J. Lane Notter, Sir Shirley F. Murphy, Dr. B. Arthur Whitelegge, and Dr. Dawson Williams. In proposing the toast of the "Society of Medical Officers of Health," Mr. Wintle said that it had now ten branches and a membership of upwards of 1000, practically every medical officer of health being a member.

HARVEIAN SOCIETY OF LONDON.—A clinical meeting of this society was held on Jan. 24th, Dr. Sidney P. Phillips, the President, being in the chair.—The President showed a case of Congenital Heart Disease. The patient was a boy, aged nine years. There was a loud systolic murmur over the aortic cartilage; cyanosis was not present. The condition was probably one of congenital narrowing of the aorta.—Mr. W. H. Clayton Greene showed a case of Bilateral Cystic Disease of the Kidneys in a man who had come under treatment for hæmaturia; both kidneys were greatly enlarged. The question of treatment was discussed and in view of the hopelessness of these cases the possibility of kidney grafting was raised. It was suggested that a kidney might be grafted into the scrotum, the spermatic vessels and vas deferens being used to take the place of the renal vessels and the ureter.—The case was discussed by Dr. J. F. H. Broadbent, Mr. T. Crisp English, Dr. B. H. Spilsbury, and the President. —Dr. L. Colebrook showed (for Mr. S. Maynard Smith) a case of Dislocation of the Shoulder, with a fracture through the lower part of the glenoid cavity. The patient was an elderly woman and the injury had occurred four months previously; a skiagram was shown.—Dr. F. Langmead showed (for Dr. H. A. Caley) a case of Aneurysm of the Innominate Artery and raised the question of surgical treatment.—The President discussed the case and considered it unsuitable for operation. He pointed out the difficulties in exact diagnosis and also the general degeneration of the patient's arteries which were in unsatisfactory condition for ligature.—Mr. Crisp English showed a man, aged 62 years, with a Large Tumour of the Left Breast. This had existed for 12 years, had greatly increased during the last 12 months, and was mainly cystic. In its upper part was a small indurated and nodular area.—Mr. F. Jaffrey thought that the hard portion might prove to be sarcomatous.—Dr. Spilsbury considered that the tumour was probably an innocent cystic growth.—Mr. Jaffrey showed a woman, aged 40 years, with a Fracture of the Lower End of the Radius and Wasting of the Muscles of the Hand. In spite of continued massage the condition had improved but slowly, and it was questioned whether any nerves had been injured.—The President showed a man suffering from General Paralysis of the Insane with atypical

symptoms.—Dr. Broadbent showed a case of Paralysis of the Third Cranial Nerve of rapid onset in a woman, aged 30 years; improvement was occurring under treatment with potassium iodide. It was pointed out that certain of these cases of nerve paralysis ultimately developed locomotor ataxia.—The President and Mr. Crisp English discussed the case.

THERAPEUTICAL SOCIETY.—A meeting of this society was held on Jan. 22nd, Dr. T. E. Burton Brown, the President, being in the chair.—Mr. F. H. Bonnefin read a paper entitled "Short Notes on a Method for Rendering Creasote and Cannabis Indica Soluble and on some Little Known Medicinal Remedies." He showed clear solutions both of creasote and of cannabis indica which he prepared by the following formulæ:—1. For making creasote soluble: Decoctum quillaiæ concentratum (1 in 7), 2 parts; solutio sodii salicylatis puri (1 in 2), 1 part; and creosotum optimum, 1 part. Shake and warm very gently. 2. For making cannabis indica soluble: Extractum cannabis indicæ (physiologically tested), 1 part; spiritus vini rectificatus, 4 parts; decoctum quillaiæ concentratum (1 in 7), 7 parts; and aqua destillata, 8 parts. Mix the extract with the alcohol, warm, add warm decoction of quillaia, shake; finally, add warm distilled water, shake, and strain after three days. He showed how each solution remained clear on adding either water or acid, so that no precipitation would take place in the stomach.—In the discussion which followed Mr. W. Soper, Professor A. R. Cushny, and Professor R. B. Wild took part, when evidence was brought forward to show that these preparations contained no active principles, and that after due consideration they had been deliberately omitted from the U.S. Pharmacopœia as inert.—Professor Wild then read a paper on the Proper Scope of the Teaching of Materia Medica, Pharmacology, and Therapeutics in the Medical Curriculum, in which he endeavoured to arouse the interest of medical men in the better teaching of therapeutics. He laid stress on the fact that while great changes had taken place in the practice of therapeutics during the past twenty-five years, there had not been corresponding changes in the teaching of the medical student. At the present time the chief obstacle to any reform in the teaching of materia medica and therapeutics lay, he thought, in the great diversity in the requirements of the various examining bodies, and some general agreement was urgently required as to what should be insisted upon as an essential minimum for qualification, and what had become obsolete and might well be removed from the overcrowded curriculum.—Professor Cushny, Dr. J. Gordon Sharp, and the Secretary joined in a discussion on the paper and agreed with Professor Wild's conclusions.

DERMATOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND.—A meeting of this society was held on Jan. 23rd, Dr. Leslie Roberts, the President, being in the chair.—Mr. G. W. Dawson showed: 1. A boy, aged 11 years, with Tinea Tonsurans to illustrate the rapid and complete clearance of all diseased hairs after only four exposures to the x rays. 2. A woman, aged 45 years, with Acute Lichen Planus of five months' duration. The eruption was of an annular type and widespread and the patient's general health had suffered much at the onset of the illness. She was being treated with salicin.—Dr. A. Eddowes showed a young woman with Acrodermatitis Hiemalis of nine years' standing. The hands were much congested and presented numerous scars the result of deep-seated nodules which had come to the surface and ruptured. The case was commented upon by many of the members who pointed out the likeness of the condition to follicilis (Barthélemy), to chilblain-lupus (Hutchinson), and also to scrofuloderma.—Dr. E. G. Graham Little presented a case for diagnosis in the person of a woman, aged 33 years, in whom a Scaly, Papular Eruption had appeared three weeks ago, accompanied by a dryness and irritation of the whole integument. The condition seemed to resemble lichen planus, but it was generally conceded to be the result of some severe toxic infection.—Dr. J. H. Stowers showed a boy, aged nine years, with a Small Nodule upon the Right Cheek. The child was said to have been bitten by a mosquito on this spot seven months previously. None of the members were satisfied that the lesion was tuberculous in nature.

BURNLEY AND DISTRICT MEDICO-ETHICAL ASSOCIATION.—A meeting of this society took place on Jan. 24th, Dr. J. S. Wilson, the President, being in the chair.—Dr. A. Macgregor Sinclair showed four tumours of Ectopic Gestation which he had recently removed from patients. He gave histories of each of the cases and laid especial stress upon each of the women having been sterile for several years and having had an offensive leucorrhœal discharge during the period of sterility, and reasoned from these facts that "ectopic gestation" was probably due to diseases either of the uterus or of the tubes. Each case was marked by the usual symptoms of abdominal pain and bloodlessness before operation and a well-marked pulsation in the fornix of the side upon which the tumour was situated. The fourth case differed from the first three, inasmuch as it was complicated by an adherent inflamed appendix and the earlier abdominal symptoms were obscure. On operating, the right tube, which contained a three or four months' fœtus, was twisted round behind the uterus and attached to the appendix, and though it was ruptured only a small amount of hæmorrhage had taken place because the tear in the tumour was filled by the protruding head of the fœtus. The cases were all treated in the ordinary aseptic manner and made uneventful recoveries.—Dr. H. J. Slane, Dr. R. C. Holt, and the President took part in the discussion.—Mr. J. H. Carter, F.R.C.V.S., who was present, related a case of Ectopic Gestation in a Newfoundland bitch.

DERMATOLOGICAL SOCIETY OF LONDON.—A meeting of this society was held on Jan. 9th, Dr. T. Colcott Fox being in the chair.—Dr. S. E. Dore showed for Dr. J. J. Pringlea case of a Bullous Disease, with the clinical features of dermatitis herpetiformis, in a man who had been under treatment for five years with arsenic. The eruption was controlled by doses of six minims of liquor arsenicalis, but the patient had latterly shown very serious symptoms of arsenical poisoning. He had pigmentation over almost the whole body, keratosis of the palms and soles, and increased knee-jerks.—Dr. J. H. M. MacLeod showed a case of Lichen Planus which had commenced with curious patches of hypertrophy of the epidermis of the knees before the appearance of more typical patches of lichen planus on the wrists had cleared up the diagnosis. The hypertrophied patches had disappeared under treatment by the x rays.—Dr. E. G. Graham Little showed an unusual case of Lupus Erythematosus, involving the scalp alone, in a medical student. The largest patch was of a band shape and had persisted for three years. Dr. Little also showed a case of what was clinically almost certainly Lupus Vulgaris of the Nose and Upper Lip in a young girl, but repeated estimations of the opsonic index showed a normal figure for tubercle and only 0·6 for streptococcus. The clinical diagnosis was supported by the opinion of the meeting.

Reviews and Notices of Books.

A Text-Book of Psychiatry for Physicians and Students. By LEONARDO BIANCHI, M.D., Professor of Psychiatry and Neuropathology in the Royal University of Naples, Minister of Public Instruction, Medical Director of the Provincial Asylum, Naples. Authorised Translation from the Italian by J. H. MACDONALD, M.B., Ch.B. Glasg., Senior Assistant Physician, Govan District Asylum. London: Baillière, Tindall, and Cox. 1906. Pp. xvi.–902. Price 21*s.* net.

THIS important treatise opens with an introduction of 23 pages, which constitutes a brief review of the evolution of the mental faculties. Then follows an anatomical description of the cerebral mantle with an account of the motor and sensory paths and centres, of associative paths, and of the minute anatomy of the cortex. The latest observations are recorded. The neuron theory, that of continuity of the neuro-fibrils, and the functions of the neuroglia are discussed in the light of recent research. The physiology of the cerebral mantle is also dealt with at length; thus, the physiology of vision, movement and speech, Flechsig's doctrine of associative areas, and the physiology of the frontal lobes (so important as organs of the highest psychic functions). Some 150 pages (constituting Part I. of the book) are given to the anatomy and physiology of the cortex cerebri.

Part II. treats of the physio-pathology of the various mental processes; thus, the physio-pathology of perception, attention, memory, will, and so on. No less than 216 pages

are devoted to the analysis of these processes in health and disease. Indeed, the domains of anatomy, physiology, and physiological psychology are perhaps somewhat too extensively invaded. The anatomical substrata of the various mental processes are discussed, it being shown that narrow conceptions of localisation cannot be entertained, the area of formation and conservation of these processes being widely diffused. In the synthesis of psychical processes the frontal lobes are mainly concerned. With respect to consciousness also the frontal lobes constitute the chief centre, though its anatomical substratum is co-extensive with the entire cerebral mantle.

Mental disorders proper are considered in Part III. (477 pages), which opens with a chapter on the methods (psychological, anthropological, and neurological) and upon the scope of clinical inquiry. The classification adopted is, in view of the "impossibility of holding to a single criterion," based upon "nosological, ætiological, and anatomo-pathological criteria." Mental affections are divided into three groups, each of which has some characteristic feature; thus in those of the first group there is always a primary defect due to want of cerebral development (congenital moral insanity, epilepsy, fixed ideas, and so on); the second group comprises affections of toxic origin supervening in normally developed persons (such as mania, confusional states, and alcoholic and morphinic insanity); and the third group includes disorders with demonstrable anatomico-pathological alterations in the brain (paralytic, senile dementia, dementia of focal lesions, and the like). The remainder of the book is occupied with the discussion of the individual members of these groups. Idiocy is described under "Phrenasthenia"; objection may be taken to such a limited application of the latter term. Sub-groups of idiocy and imbecility are not described for the reason that they are artificial. Under "Paraphrenia" come the eccentrics, "cranks," fanatics, and such like borderland cases. Under "Delinquency" are considered the anti-social or criminal classes. The author distinguishes between the criminal born and the criminal from acquired habit but does not admit an anthropological type of delinquent. Modern views upon the toxic origin of epilepsy are discussed; the anatomical changes found in the brains of epileptics are regarded as effects and not causes. 37 pages are devoted to "hysterical insanity" but under this heading ordinary hysteria is also described. The author is no advocate of hypnotism though he recognises the occasional benefit derived from various forms of suggestion. In regard to paranoia, *quot homines, tot sententiæ;* we are not surprised to find that Professor Bianchi has views of his own. The manifestations of this disorder would appear to vary much in accordance with the nationality of the patient and to be peculiarly susceptible to local colouring. The remaining disorders of the first group are obsessions, neurasthenia, and the sexual psychopathies. In introducing the disorders of the second group reasons are given for the belief that they are due to the entrance of endogenous or exogenous toxins into the blood stream. The chief members of the group are mania, melancholia, "sensory" insanity, acute delirium, and alcoholic insanity. Pure mania and melancholia are recognised apart from "manic-depressive" insanity. "Sensory" or hallucinatory insanity (an unusual designation) covers the various conditions included by others under dementia præcox. The chief disease of the third group is naturally paralytic dementia, to which 45 pages are devoted. Modern views as to its etiology and pathology are fully discussed and it is shown that great uncertainty still exists on these points. Short chapters on other forms of dementia due to organic lesions bring this comprehensive treatise to a conclusion. The book is freely illustrated.

Professor Bianchi's high reputation in the field of psychological medicine led many to welcome the announcement that an English translation of his work had been undertaken. The book gives evidence throughout of its distinguished author's great experience, industry, and scientific impartiality, and he exhibits a truly cosmopolitan acquaintance with the literature of his subject. He has produced a standard work. With but rare exceptions we find the English of the translation clear and readable.

Growth, A Novel. By GRAHAM TRAVERS (MARGARET TODD, M.D. Brux.). London: Constable and Co. 1906. Pp. 418. Price 6*s*.

"GROWTH" more than fulfils the early promise of the author who gained so wide a circle of admirers by her first novel, "Mona Maclean, Medical Student." This later and more mature work will appeal to the large public of thoughtful readers who appreciate a sympathetic study of the momentous years of student life, those most important and fertile years of mental and moral growth in the history of the individual.

The hero, Dugald Dalgleish, only son of a widow, leaves his country home as soon as he can gather together funds enough (12*s*. a week) to enable him to go to the University of Edinburgh to study for the ministry. An enthusiastic idealist eager for knowledge, the young Calvinist is thrown into the society of kindred intellects, and takes a prominent part in the debating societies which form such important influences in the lives of a nation proverbially prone to love argument on theological and metaphysical matters. The overwhelming inrush of new ideas born of modern science and philosophy unites to shake the very foundations of the young man's being; his studies are neglected and for a time his character is altered for the worse. He is saved from sinking to any depth by three strong influences—the friendship of the heroine Judith, love for a beautiful actress, and hero-worship of his senior fellow-student Thatcher. Judith understands the lad's state of mind and administers doses of praise or blame and renders unselfish assistance whenever necessary. Her gospel is the Human Brotherhood and her life is steadfastly devoted to helping lame dogs over stiles. Regardless of conventions, with strict ideals of duty, yet not lacking in humour and in readiness to admit her errors and prejudices, combining the intellectual honesty of man with the sympathy and loveableness of woman, Judith presents one of the most attractive types of modern womanhood in fiction and the reader is the richer for having made her acquaintance. Ianthe Brooke, the actress, is a less real figure, but the bewildering effect of her grace, charm, and beauty on the raw lad who had been brought up to regard beautiful things and pleasures as works of the devil is carefully and truthfully portrayed. Thatcher, the ascetic hero, forms an interesting study of the conversion of a Puritan to Roman Catholicism.

We may here mention that the author should not have described a typical group of Scottish students in Edinburgh as belonging to a Nonconformist chapel with a pastor. It would have been more in keeping with local colour had she associated them with a minister and a seceding kirk, and what she describes is, in fact, such a community.

The numerous other characters in the novel all illustrate a definite outlook on life, showing their individual solution of the problem of the meaning of life and duty and their relation towards God. It is greatly to the credit of the author that the underlying religious *motif* of the book is not too much in evidence; the characters live, they are not mere shadows who repeat formulæ in order to promote their creator's belief in a particular creed. In this respect "Growth" stands far above the average novel with a "religious purpose." The attitude of doubt, the criticism of each and every creed and church, natural to a group of honest young students, is truthfully depicted; and the ultimate adhesion to one or another church, according to the

individual's temperament and ability, as described by the author, is true to life. The good in every church is generously illustrated; the evil and the limitations are but lightly mentioned. Thatcher and Carew represent the advanced intellectual type of Roman Catholic; Frances and Monsignor the emotional type, to whom dogma and tradition are as necessary as the air they breathe. Mr. Atherley, the pastor, is the foil to Father Bernard; both acquit themselves equally nobly; both are ornaments to their respective churches.

Less happy, we consider, is the portrayal of the final effect of the new scientific and philosophical thought on Dalgleish and his sister Grizel. The following suggestive paragraph should have served as a text for the final chapters of the book: "To his great delight, he had started Logic and Metaphysics. ..... Day after day he drank in the lectures as a thirsty soil drinks in the rain. To be given the forms of thought, combined with such freedom to think, was a privilege he had ceased to expect from his pastors and masters, and it was beneficial as much from a moral as from an intellectual point of view. Little as he suspected the fact, freedom of thought had come of late to mean for him something perilously like lawlessness. The new studies had pricked that bubble for ever." Many a young student, when deprived of his belief in dogmas, has imagined that religion and morality necessarily fall at the same time; but a deeper study proves to him that religion and morality not only remain unaffected but are natural forces all the stronger and more convincing for their lack of artificial props. Dalgleish and Grizel are shown in their first stage of despair and sadness, bravely accepting Truth but unconsoled for the loss of their ancient and dear beliefs. But if they lost some loved beliefs they also lost many cramping and cruel beliefs. By means of their new knowledge they gained a wider, grander faith, with endless vistas of glorious promise, and they acquired a nobler conception of God, one more in harmony with the great movements of the universe revealed by scientific research. Of a surety, after a few unsettled years of mental bewilderment, the happiness and comfort of their newer knowledge would have more than recompensed them for their incapacity to regard life from the same standpoint as their saintly mother. This more advanced stage of reconcilement and peace is hinted at rather than described and for this reason the book to many readers will appear incomplete, like a noble song brought to a sudden end before the final note of triumph has been sung.

We can confidently recommend this novel as a work of art, describing a side of life which is but rarely met with in fiction. Novels professing to deal with student life usually depict games, slang, and convivial gatherings; the inner turmoil of the awakening active young spirit, the idealism, and the earnest seeking after truth are equally true and more important aspects of student life, and it is these that "Growth" so capably and sympathetically describes.

Medical Electricity. By H. LEWIS JONES, M.D. Cantab., Medical Officer in charge of the Electrical Department, St. Bartholomew's Hospital. Fifth edition. London: H. K. Lewis. 1906. Pp. 519. Price 12*s.* 6*d.* net.

LITTLE more than two years have elapsed since we reviewed the fourth edition of this important work. In the interval the author has almost entirely rewritten the book and has also rearranged the contents, besides deleting some parts which were unnecessary. All the changes which have been thus brought about serve to increase the value of the book.

The historical chapter with which the previous editions opened has been omitted, and Chapter I. now forms a useful introduction to elementary physics, where those who wish may refresh their memories with regard to the fundamental principles of the whole subject. The next six chapters deal with apparatus in a very thorough manner, from the simplest form of medical battery to the latest development in high potential electricity. Chapter VIII. is devoted to Roentgen Rays and forms a very excellent and trustworthy *résumé* of the present position of this branch of work. Next follows a chapter on physiological considerations, in which the general effects of the various forms of electricity on the tissues are fully gone into. Then come others on general diseases, the nervous system, circulatory disturbances, special senses, and the skin.

We notice that the special chapters on electricity in surgery and the electric bath are now done away with and the matter is distributed around the chapters on apparatus or therapeutics as may be most desirable. The chapter on diagnosis has also disappeared as a separate entity and is incorporated in the chapters dealing with the nervous system, to which it more properly belongs.

The whole book has been brought entirely up to date and in our opinion is likely to maintain the position which it has long held as the standard work on medical electricity in this country.

LIBRARY TABLE.

Atlas of Applied (Topographical) Anatomy. By Dr. KARL VON BARDELEBEN and Professor Dr. H. HAECKEL. Authorised English adaptation from the third German edition, containing 204 woodcuts in several colours and descriptive text. By J. HOWELL EVANS, M.A., M.B., M.Ch. Oxon., F.R.C.S. Eng. London and New York: Rebman Company. 1906. Large crown 4to. Price 32*s.* net.—In preparing this adaptation of Bardeleben's well-known atlas Mr. Howell Evans has been guided in his selection of plates by their relative clinical importance. Those regions of the body which have of recent years become of increasing interest have received particular attention. We find especial prominence given to the anatomy of the tympanum and its accessory cavities, to the air sinuses of the face and base of the skull, to the Gasserian ganglion, and to the surgical anatomy of the gall-bladder, bile ducts, pancreas, and organs of the male pelvis. The anatomy of the limbs is well illustrated but the plates possess no distinctive features. We notice that the "sigmoid flexure" is still described and that the cutaneous segmental nerve areas are not figured in accordance with the views of English observers. The atlas will, no doubt, find its sphere of usefulness but as it is not provided with an index speedy reference to any desired point is very difficult.

The Development of the Human Body: a Manual of Embryology. By J. PLAYFAIR MCMURRITCH, A.M., Ph.D., Professor of Anatomy in the University of Michigan. Second edition, revised and enlarged. With 272 illustrations. London: Rebman, Limited. 1906. Price 14*s.* net.—Without pretence at originality Professor McMurritch presents the subject of human embryology in a very readable and convenient form. His descriptions are lucid and at the same time concise. Moreover, by avoiding reference to highly controversial matters the attention of the reader is not distracted from the essential of the subject. The result is a text-book well adapted to the needs of the ordinary student. The book is divided into two parts, of which the first is concerned with general development, whilst the second deals with the formation of the various systems and organs, concluding with a chapter on post-natal development. The volume is well illustrated, mainly by figures from various well-known authorities on the subject. We are not surprised to find that a second edition has so soon been called for.

Muscles and Nerves: an Atlas of the Superficial Muscles and Principal Motor Nerves of the Human Body, for the Use of Students of Anatomy and Nurses. By LOUIS BATHE RAWLING, F.R.C.S. Eng., Assistant Surgeon and Senior Demonstrator of Anatomy, St. Bartholomew's Hospital. With four figures and explanations. London: The Scientific

Press, Limited. 1906. Price 3s. 6d. net.—This is an inexpensive and useful atlas by the aid of which a good knowledge of the muscular elements which enter into the formation of the contour of the human body can be rapidly attained. The positions of the motor nerve trunks are also indicated. We should like to see the book in the hands of all medical students and nurses.

The New Hygiene: Three Lectures on the Prevention of Infectious Diseases. By ELIE METCHNIKOFF With a preface by E. RAY LANKESTER. London: William Heinemann. 1906. Pp. 104. Price 2s. 6d.—In this little volume we have a translation of the Harben Lectures which were delivered in French by M. Metchnikoff in May, 1906. The author is, of course, well known as an eminent biologist who has for many years been connected with the Pasteur Institute in Paris. For the subjects of the three discourses addressed to his London audience he selected the Hygiene of the Tissues, the Hygiene of the Alimentary Canal, and Hygienic Measures against Syphilis. In the first lecture he dealt mainly with the influence of phagocytosis in producing immunity against microbial infection, the existence of pathogenic bacteria in healthy persons, the formation of agglutinins and sensitising substances in the blood serum of patients, Sir A. E. Wright's discovery of opsonins, and the action of alcohol in weakening the natural power of resistance to infection. In the second lecture he suggested that appendicitis and some other diseases might be due to inoculation of microbes on punctures of the lining membrane of the bowel by intestinal worms. In the third lecture he recommended mercurial inunction as a protective against syphilitic infection. The literary form of the lectures is excellent and this brief summary is sufficient to show that the subjects dealt with are of great interest and importance. The translation is, on the whole, very readable; on pp. 6 and 8, however, a quaint effect is produced by the two adjectives typhoid and enteric, as applied to fever, being sometimes used in the same paragraph.

Hygiene of the Nursery. By LOUIS STARR, M.D. Seventh edition, with 25 illustrations. London: H. K. Lewis. 1906. Pp. xii.-309. Crown 8vo. Price 3s. 6d.—In the preparation of this edition the subject matter has been carefully revised and amended wherever necessary to keep abreast with the advances and improvements made in the methods of managing infants and children. Special attention has been given to the chapter on Food and numerous additions have been made to the Dietary and to the section devoted to Emergencies. The chapter which deals with the choice of a nurse-maid and the qualifications to be sought for may be read with benefit by every mother. The author sets forth a series of hygienic rules which can hardly fail to maintain the nursling in good health, to give vigour to his frame, and to lessen the susceptibility to disease. Little reference is made in the volume to drugs or methods of medical treatment, the author's object being to show a mother how she can keep her baby well by using preventive means. The first chapter is written with the object of hinting to the mother when she may expect the onset of disease and should call in professional counsel. We think that this edition will meet with the favour which the public has accorded to its predecessors.

First-Aid Tablets of Fractures. By S. O. EADES, L.R.C.P. Edin. Ipswich: W. E. Harrison. Pp. 45.—The author of this little book reminds us that from a beginner's point of view scientific facts may be divided into those which are seen and daily met with by the student, and which he readily masters, and those which he studies and endeavours to remember, with no inconsiderable trouble, but unfortunately easily forgets. This book is intended for the latter class. The object of the author is threefold: (1) to help those who are studying for first aid and for competitions; (2) to recall to memory at a glance facts easily learnt and as easily forgotten by first-aid certificate, voucher, medallion, and label holders; and (3) lastly, to encourage the good work which is being carried out by members of the St. John Ambulance Association and Brigade. The little book is written in a practical way and clearly points out what should and what should not be attempted by those who practise first aid. It will be helpful to those for whom it is intended.

From Her to Him. By GEORGE H. R. DABBS, M.D. Aberd. London: Charles William Deacon and Co. 1906. Pp. 66. Price 2s. 6d.—In this poem, which is dedicated "To the Memory of a Noble Woman," Dr. Dabbs tells a pathetic story in suitable language and setting, the pathos at times almost amounting to pain. The work affords glimpses into the environment of a beautiful life.

The Tourist's India. By EUSTACE REYNOLDS-BALL, F.R.G.S. London: Swan Sonnenschein and Co., Limited. 1907. Pp. 364. Price 10s. 6d.—Mr. Reynolds-Ball is the guardian angel of the tourist. He is always ready to hold out a helping hand to anyone who wants to "do" the Mediterranean in six weeks or India in three months. To do him justice, however, he seems to be under no delusion as to the objectionable qualities of the cold weather tourist, and in Chapter II., which, however, is written by a friend of Mr. Reynolds-Ball, is quoted a remark of Mr. Hope Moncrieff about "T.G.'s" whichis altogether illuminating. The tourist, however, will find a great deal of information in Mr. Reynolds-Ball's book, also some excellent photographic illustrations. We cordially agree with him when he says (p. 322) that alcohol should not be consumed as a beverage in the tropics, though, of course, it must be remembered that a large portion of India is anything but tropical. We must, however, join issue with him on some of his medical instructions. In THE LANCET of Jan. 31st, 1903, we reviewed his book on travelling in the Near East and pointed out errors in some medical instructions. He has reproduced these errors in the work before us in all their inaccuracy. For instance, he talks about washing out the wounds caused by the bites of wild animals with an antiseptic, but, as before, gives no details as to how this is to be effected; and, worst of all, he reproduces exactly the following absolutely useless receipt for an improvised stretcher, or hammock as he prefers to call it. "A hammock can be improvised by running a stick through the sleeves of a great coat or ulster." This piece of information is no good to anyone. In the review quoted above we explained how he should have described the coat stretcher, and we again draw his attention to it. Should the work reach a second edition an index should be provided, and the present edition is so carelessly bound that we feel sure that the book would be in pieces before it had been used for a week.

THE MULKOWAL DISASTER.[1]

IT will be remembered that inoculation on a vast scale was undertaken in the Punjab in the winter of 1902-03 with Haffkine's anti-plague prophylactic. Over half a million people were operated on in the plague season of that year and of this number about a quarter were inoculated with prophylactic prepared by agar cultivation and sterilised by heat, and the rest with material cultivated in broth and aspecticised by the addition of a small quantity of carbolic acid. From a report issued by the Government of the Punjab in 1904[2] it appears that the result of the measure was to reduce the liability to attacks among the inoculated to about one-fourth of what it was among the non-inoculated people and the liability to death from plague to nearly one-twelfth; and it is estimated that the number of lives saved amounted to at least 10,000. A deplorable accident, however, attended this campaign. On Nov. 4th and 5th,

[1] Supplement to the Gazette of India, Dec. 1st, 1906.

[2] Report on Plague and Inoculation in the Punjab from Oct. 1st, 1902, to Sept. 30th, 1903, by Major E. Wilkinson, I.M.S., chief plague medical officer, Lahore, 1904.

1902, 19 persons who had been inoculated on Oct. 30th from a bottle of agar prophylactic in a village called Mulkowal, developed tetanus and succumbed to it between Nov. 6th and 9th. The matter was investigated by a commission in India and was subsequently submitted for examination to the Lister Institute. On Dec. 1st, 1906, the Government of India issued in Calcutta, in the form of a supplement to the *Gazette of India*, a file of documents referring to the subject. We submit the essential points of the inquiry as gathered from these documents, and our readers will at once perceive the importance of the questions involved.

The following appear to us to be the main facts. The 19 people were inoculated, by means of the same syringe, with prophylactic from a bottle which was one of five filled from one and the same laboratory cultivation flask. The cultivation was marked "53 N." The four other bottles were used for inoculation elsewhere and caused no ill effects; the syringe before being refilled for another batch of inoculations was rinsed out with carbolic lotion.

The people who developed tetanus were the first of a batch of about a hundred inoculated in Mulkowal on that morning. They were the only persons inoculated from bottle 53 N. and none of those inoculated after them from other bottles had any untoward symptoms. The accident was therefore closely connected with the bottle used and the particular syringe with which the contents of that bottle were injected, and the question presented itself as to whether that bottle was contaminated at the time of using it in Mulkowal or at the time of its preparation in Bombay and what were the circumstances in which contamination occurred. An interval of several weeks separated the possible dates of contamination, for the bottle was prepared 41 days, and despatched to the Punjab 26 days, before the accident.

The possibility of getting an answer to the primary question lay in the fact that a tetanus impurity falling into a bottle of agar prophylactic does not remain dormant but starts growing. The Indian Commission and the Lister Institute ascertained that in a few days a rich culture of tetanus develops in that medium. The culture gets extremely active and when the Mulkowal germ was used for the experiment the culture gave tetanus to guinea pigs in doses of $\frac{1}{2500}$th and $\frac{1}{2500}$th of a cubic centimetre. (With a culture made in ordinary media $\frac{1}{10}$th of a cubic centimetre was required to cause such an effect.) The fluid acquires also an unmistakeable disagreeable odour, as happens with most anaerobic fermentations and putrefactions. Such a rich culture develops, however, only when the germ is left in a bottle full, or practically full, of prophylactic, the tetanus bacillus being an anaerobe. When left in the remnants of fluid, in a bottle emptied of its contents, the air present in the bottle inhibits the growth of the tetanus bacillus. This, however, is only the case when the bacillus is introduced by itself, free from admixture of other microbes. If aerobic germs gain access to the bottle at the same time, the tetanus microbe develops even in a few drops of fluid, but only in proportion as the other microbes present absorb the air dissolved in the fluid. In the two eventualities—i.e., (1) in the case of a contamination occurring at the time of opening a bottle for use, on the one hand; and (2) in the case of contamination at the time of preparing it, several weeks previously, in the laboratory—the condition of the contents of the bottle will, therefore, be very different. In the first case the bottle will contain only a relatively insignificant amount of impurity, such as is met with in natural or surgical tetanus accidents; in the other, it will present, so to say, a solid mass of tetanus and toxin, and the men inoculated will get an amount of virus such as in no circumstances occurs in natural accidents.

On the question as to whether an insignificant amount of tetanus, dropped into and diluted in a bottle of prophylactic at the time of using it, can affect 19 individuals, several experiments were made by the investigators and are published in the supplement. In one experiment a minute bit of straw contaminated with tetanus was introduced into a prophylactic bottle. A sixtieth portion of the contents of the bottle was then examined; a culture inseminated from that portion revealed tetanus bacilli. In another experiment a syringe needle dipped into a culture of tetanus was allowed to dry, and was then used for ejecting 20 cubic centimetres of a *sterile* fluid, in doses of one cubic centimetre each. The fluid conveyed tetanus germs up to the seventeenth ejection, the eighteenth and nineteenth were not examined; in the twentieth no tetanus was found. In another experiment a bottleful of prophylactic was contaminated with *one platinum loop of a fluid tetanus culture*, and was then injected at once into guinea-pigs, with a thirtieth portion of the prophylactic each. Every animal contracted tetanus.

The possibility of 19 inoculations conveying tetanus germs from an accidental impurity falling into a bottle at the time of inoculation must therefore be considered as established. If the subjects of inoculation at Mulkowal were inoculated with such an accidental impurity the course of the disease exhibited by them should, on the whole, correspond in rapidity of onset and development of symptoms to what has been usually observed in India in cases of tetanus where the infection has been contracted in the usual way. On the other hand, if a rich culture of bacilli and a mass of manufactured toxin had accumulated in the bottle before the time of using it we should expect a much more rapid onset of symptoms. The character of the disease in the Mulkowal patients pointed to an average degree of gravity of infection and the symptoms were, in fact, slower to develop than has been observed to be the case in many accidental cases.

The bottle was carefully examined at the time of opening it for use; it had no smell of any kind and appeared normal in appearance and every other respect. The smell is a very valuable index of a tetanus growth having taken place in the fluid, and as it has been ascertained that this smell becomes unmistakable within three days of contamination the conclusion is justifiable that the prophylactic contained in bottle 53 N had not been contaminated with the tetanus bacillus even for this short period.

Fifteen days after the inoculation the incriminated bottle was recovered and the remnants of fluid found in it were examined by Lieutenant-Colonel D. Semple, R.A.M.C. A mixture of a few tetanus bacilli presenting a "poor culture," and of a common microbe was found in it. The "poor culture" corresponded to one that would develop in the presence of air, in the few drops left in the bottle after it was emptied. With the culture thus developed the bottle acquired the characteristic smell. The effect on animals on which the fluid was tested was found to be several times weaker than that of a culture grown in a full bottle.

Lastly, the following fact bearing on the question was established by experiment. The Mulkowal operator worked with two syringes. After using up a bottle of prophylactic, he filled his syringe with carbolic lotion and left it for three or four minutes before using it again on another bottle, and operated in the meantime with his other syringe. It has been found that a syringe which had been filled with a rich culture of tetanus, such as develops in a full bottle of prophylactic, remained infective after such a process of cleaning and gave tetanus to 17 guinea-pigs out of 19, on which it was afterwards used. On the other hand, a syringe which had been in contact with a feeble culture of tetanus, or of which the needle alone had been so contaminated as to convey tetanus in 17 consecutive injections, was rendered safe after that process of cleaning. None of the subjects on whom the syringe was used in Mulkowal, subsequently to the cleaning applied after the first bottle was finished, suffered from tetanus. This indicates that that bottle did not contain the kind of culture which left the syringe infective after the summary cleaning.

The circumstances in which the inoculations were carried out at Mulkowal made accidental contamination possible. The operations were performed by Dr. A. M. Elliot in the open air on the outskirts of the village. Shortly before the commencement of the campaign a "plague manual" was issued to the inoculators. According to that manual "the opening of bottles of prophylactic and the filling of syringes are the chief duties of the compounder. ..... If there is great press of work the duty of actually opening the bottles may be entrusted to any intelligent person, care being taken to see that he observes the above instructions carefully." The instructions in question prescribed as follows: "The compounder, in proceeding to open a bottle, must shake it well, then dip its neck in carbolic lotion, 1 in 20, and then, with a pair of dissecting forceps, which when not in use are to be kept in the carbolic lotion, remove the cork." At Mulkowal the cork was tightly fixed in the bottle and the compounder in withdrawing it dropped his forceps on the ground; he picked them up, hurriedly dipped them in carbolic lotion, and then completed the removal of the cork.

The above is a *résumé* of the facts set out in the voluminous supplement to the *Gazette of India*. The Commission

appointed to inquire into the case in India makes references to them, and the Lister Institute, to which body the technical portions of the report of the Indian Commission were referred, does the same. Mr. Haffkine's comments upon the findings of both bodies are published in the form of two letters addressed in the spring of 1906 to the Under Secretary of State for India. Our account is necessarily much abbreviated, but it seems to us that the supplement is unnecessarily lengthy.

Regarding the absence of smell in the bottle used at Mulkowal the Indian Commission says :—

> No doubt the presence of tetanus, at any rate in a pure culture, may be detected by one experienced and on the alert by its characteristic smell; our personal observation, however, leads to the conclusion that all bottles of plague prophylactic have a peculiar and not agreeable smell, so that Dr. Elliot, under the circumstances under which he was working, may well have failed to specialise a tetanus smell.

Mr. Haffkine, commenting on their words, observes that in the above statement the *detecting of the presence of a smell* is confused with *specifying a smell*. It is the latter that requires an experienced person and it is also for specifying a smell that the culture requires to be pure—i.e., not adulterated by the smell from another fermentation. In the Mulkowal bottle it was established that there was *no smell whatever*, not that it had a smell the character of which was not specialised. To ascertain such a fact a specialist is not required. The statement of the Commission, he considers, confuses the broth prophylactic, which has a slight smell of broth and carbolic acid, and which was not in use at that period of the campaign, with the agar prophylactic, with which Dr. Elliot, the operator, was working and which is free from any smell. Dr. Elliot, who had been on inoculation duty for two years before, stated on evidence that he was perfectly familiar with that difference. His sense of smell was tested before the Commission and bottles of the two varieties of prophylactic were placed before him without his being told which they were. He distinguished without hesitation the two kinds of bottles and rejected at once the Mulkowal bottle, which was mixed up with the others, as being unfit for use.

The Lister Institute refers to the question of smell as follows :—

> That a bottle presumably tightly corked (*vide* Dr. Elliot's evidence) should contain enough tetanus growth to destroy 19 people, and yet not be accompanied by sufficient smell to arouse the suspicion of Dr. Elliot who, according to his evidence, remembers smelling this particular bottle, is difficult to comprehend.

From a subsequent explanation given by the institute, it appears that it did not consider the existence of a tetanus "growth" necessary in order that the bottle should contain enough germs to destroy 19 people; and the above pronouncement regarding the absence of smell was explained by it as meant to be in favour of the Bombay Laboratory.

Regarding the similarity of the disease developed in the Mulkowal patients with that observed in accidental cases of tetanus, the Indian Commission says :—

> It must be conceded that in experiments on animals the rapidity of the onset is influenced by the amount and virulence of the toxin introduced, and *à priori* we see no reason for saying that similar results might not follow the injection of the tetanus microbe with its toxin into the human body. Manifestly there can be no appeal to clinical experience which is based on observations of cases where it must be supposed the microbe alone has been introduced and has only commenced the elaboration of toxin—the actual cause of the symptoms—after it has established itself in the injured part. Though therefore the ordinary incubation of tetanus in clinical experience in India is a period which substantially corresponds with what was manifested at Mulkowal, it is impossible to say, in the absence of experiment, what the sequel would be where a ready formed toxin is injected into the human system.

Mr. Haffkine points out that while in all other instances the Commission based conclusions on the result of animal experiment, the above is the only instance in which it did not apply to man a rule which should have no exception, whatever susceptible animal or whatever disease be in question—viz., that a dose of ready manufactured toxin hastens the incubation of a disease and the development of a fatal issue.

Referring to the facility with which the syringe in Mulkowal was freed from tetanus, the Indian Commission quotes experiments (Nos. 1 and 2, Appendix B of the Report) in which Lieutenant-Colonel Semple found that when he filled a syringe from a tetanus culture developed in a full bottle of prophylactic, and then after a few minutes emptied and cleansed it in the way done at Mulkowal, it still retained enough tetanus to infect 17 out of 19 animals on which it was afterwards used; while when a feeble growth of tetanus was substituted for the above the syringe, after cleansing, appeared harmless. It says: "There are no means of forming an opinion as to the precise richness of growth in Bottle 53 N. beyond Lieutenant-Colonel Semple's view that it was a poor growth in comparison with that which he used in his experiments Nos. 1 and 2 in Appendix B. This view is based on (1) microscopical specimens, and (2) the rapidity of the fatal effects on guinea-pigs."

The Lister Institute on its part remarks :—

> Whether the inoculation of a fluid containing tetanus organisms into the body of an animal is or is not followed by the disease, depends, as was shown by Semple, upon the number of organisms introduced under the particular circumstances.

Mr. Haffkine points out that, had the Mulkowal bottle been contaminated in Bombay and tetanus developed in it while it was full of prophylactic, it would have been just in the condition of the bottle which Lieutenant-Colonel Semple prepared for his experiments Nos. 1 and 2, and which left the syringe contaminated after cleansing; it would not have been in the condition in which Bottle 53 N. was when seen by him. The absence of untoward symptoms in those inoculated with the Mulkowal syringe after the first 19 persons confirms, therefore, the fact that the bottle used did not harbour tetanus cultivated since the preparation of the prophylactic in Bombay. There is also no ground for saying that Bottle 53 N., when seen by Lieutenant-Colonel Semple 15 days after the accident, was in the same condition as at the time of inoculation; everything, on the contrary, indicates that the "poor growth" seen by Lieutenant-Colonel Semple developed in the remnants of the fluid subsequently to the bottle being emptied.

The conclusion of the Indian Commission.—The ultimate conclusion of the Indian Commission upon the question of the place of contamination was as follows. Against the considerations favouring the view that contamination was introduced at Mulkowal "there is," it says, "the fact that the specific contamination permeated the whole fluid in the bottle, as is shown by the uniform results of the sufferers; and without a series of suppositions opposed to all reasonable probability these results can only be attributed to a growth of some duration, though not necessarily of great vigour." On account of this it concludes that the contamination had entered the bottle in Bombay at one of the stages of the laboratory preparation.

The conclusions of the Lister Institute.—The Lister Institute gave its conclusion on three occasions. First, in a detailed report in November, 1904, and comprising the description of all the experiments made by it. In this report the institute expressed the opinion that contamination was most probably at the time of inoculation present in the fluid, but that it was impossible to determine when it had entered it. This conclusion was referred to as being the same as that come to by the Indian Commission. The second pronouncement, communicated to the Under Secretary of State for India on Nov. 9th, 1905, was in the following letter from the director :—

> In reply to your letter of 2nd Nov., 1905 (R. & S. 2658) I am directed to state that the institute is of opinion that the fluid used at Mulkowal probably became contaminated with tetanus before the time of opening the bottle at Mulkowal, but it also agrees with the Commission (extracts from the report of the Punjab Plague Inoculation Commission, page 5, sixth line) that the possibility of the contamination having effected an entrance at Mulkowal cannot be excluded.

Lastly, in May, 1906, the following report was given :—

> In further reference to your letter R. & S. 409, of the 9th March, 1906, I have now the honour, by direction of the governing body of the Lister Institute, to submit to you the following observations on the letters from Mr. Haffkine of the 14th February 1906, and the 10th March, 1906. The governing body of the institute, while of opinion that the probabilities were in favour of the view that the tetanus impurity was primarily in the fluid, did not feel justified in asserting this as a proved fact in view of the possibility of contamination at Mulkowal. The governing body regret that in their report of the 24th Nov., 1904, they inadvertently referred to their conclusion as the same as that of the Commission. The sentence in the Government Report that gave rise to this idea was, "That it (the contamination) might have effected an entrance at Mulkowal cannot be disputed; thus, by way of illustration, the stopper or the forceps might have been dropped on the ground and applied to the mouth of the bottle with contamination adhering, or spores settled between the rubber stopper and the rim of the bottle might have dropped in as the stopper was pulled out." The governing body overlooked the fact that the Commission subsequently considered this possibility as one cancelled by other considerations. But in this respect the governing body are bound to say they cannot fully concur, and while holding to their view of the probability, they think Mr. Haffkine has a right to claim the benefit of the doubt, especially in view of the fact elicited that the forceps used for drawing the cork at

Mulkowal were dropped on the ground and subsequently re-used by the operator on the same cork.

The governing body also regret that in the first paragraph of the section of their report dealing with the probable origin of the tetanus virus (page 3), to which Mr. Haffkine draws attention in his letter of 14th February (page 31), the words "the fact" were drafted into the sentence. The words should have been omitted and the sentence should have run: "But that a bottle, presumably tightly corked, should contain enough tetanus growth to destroy 19 people, and yet not be accompanied by sufficient smell to arouse the suspicion of Dr. Elliot, who, according to his evidence, remembers smelling this particular bottle, is difficult to comprehend." Mr. Haffkine is certainly entitled to this correction, though the argument in his favour was already clear from the context.

Mr. Haffkine points out that, with reference to the circumstances in which the inoculations were carried out at Mulkowal, it is known that it takes some 15 hours to destroy a tetanus impurity by carbolic lotion. The procedure prescribed could not aseptiсise the mouth of a bottle on which such an impurity might have settled in the open air, or sterilise a pair of forceps contaminated by being dropped on the ground. It appears that these instructions were prescribed in substitution of those issued by the laboratory, and which directed that "dissecting forceps are to be used for removing the stopper. The branches of the forceps are heated in the flame of a spirit lamp immediately before use and guarded from contact with any unsterilised object afterwards. The stopper and neck of the bottle are then passed several times through the flame of a lamp so as to cause very slight singeing of the stopper, and the latter is withdrawn with the heated forceps. After the bottle is opened any contact between its mouth and other unsterilised objects is to be carefully avoided, and if contact inadvertently occurs, the mouth of the bottle is to be heated again in the flame to disinfect it."

Lastly, we must briefly refer to the modifications of Haffkine's prophylactic, as questions arising here were dealt with in the course of the Indian inquiry. It seems to us a pity that the inquiry was not kept strictly, at any rate in the first instance, to the all-important point of the time of the contamination of the deadly fluid. It has been mentioned in the beginning of this note that the prophylactic used in the Punjab was prepared partly from agar cultivations sterilised by heat and partly from broth cultures to which a small proportion of carbolic acid was added. Either of these processes is in use in European and American laboratories. The agar method of preparing the prophylactic with sterilisation by heat has been in use in the Pasteur Institute in Paris since 1900. Many of the antitoxic sera are sterilised by heat but in some laboratories a small proportion of antiseptic is added to them. That the addition is not without benefit no one denies but too much must not be claimed for it. For instance, the accident which occurred in Italy in 1900, and which involved the death of some 20 people from tetanus, was caused by the injection of an antidiphtheric serum prepared with 0·5 per cent. of carbolic acid.

The above considerations as a whole, facts and comments and theories, point, in our opinion, strongly to the conclusion that the laboratory was not at fault. We congratulate the Government of India upon publishing the supplement even after the expiration of a considerable interval of time. The value of preventive inoculation is as yet barely recognised by the public and apprehensions that errors in laboratory procedure may lead to appalling disasters will be for some time strong. It is a distinct advantage to the cause of scientific therapeutics that good reasons should be made publicly known for attributing the Mulkowal disaster to an accident at the periphery of the scheme and not to a central blunder.

Another point cannot be ignored. For four years Mr. Haffkine, the director of the laboratory in which Bottle 53 N. was prepared, has borne in the minds of many responsibility for the disaster, and justice required that the Government of India should make known to the public the degree of responsibility of its distinguished servant. We do not know what reasons the Government may have had for the slow course pursued, but the advantage which arises therefrom—one which we do not expect Mr. Haffkine to appreciate—is that the matter can be discussed with a freedom from personal bias that would have been impossible at the date of the disaster. The matter is over; what is necessary is that the experience gained from an investigation of the facts should be used to the full in the interest of the developments of scientific medicine.

Looking Back.

FROM

THE LANCET, *SATURDAY*, Jan. 31st, 1829.

SURGICAL REFORM DINNER TO MR. WAKLEY.

Mr. Paty to Mr. Wakley.

33, Bouverie-street, Fleet-street,
Jan. 24th, 1829.

DEAR SIR,—The gentlemen who undertook the arrangements connected with the resolutions, adopted at a public meeting in the Freemasons' Tavern, on Tuesday, Dec. 23rd, 1828, (a copy of those resolutions having already been transmitted to you,) have requested me, as Chairman of that meeting, to inform you, that, should the day suit your convenience, they consider the 18th of February next, the most proper time to beg the favour of your company in the same tavern, at a public dinner.

I beg leave to state also, that their reason for naming that day in preference to any other, was, that it will be the anniversary of the commencement of those proceedings which, if zealously pursued, with the continued assistance of a Free Medical Press, will tend to raise your professional brethren from their present degraded condition; which has been attributed, with justice, to the constitution and government of the Royal College of Surgeons in London.

An answer to this letter, at your earliest leisure, will oblige the gentlemen at whose request I write; and also,

Your most obedient Servant,

Thomas Wakley, Esq. JAMES PATY.

Mr. Wakley to Mr. Paty.

Bedford-square, Jan. 24, 1829.

DEAR SIR,—I need scarcely say, that I feel most sensibly the very flattering testimony of approbation, which my public conduct received from the large and respectable meeting, over which you presided on the 23rd of December, at the Freemasons' Tavern. My exertions in the cause of a Free Medical Press, and Free Medical Institutions, have, at least, been honest, and honest exertions the public of this country never fail to appreciate. I am sensible also, that the late trial has contributed greatly to strengthen the hands of public writers, by the important decision given at the outset of the cause, in favour of Journalists who feel that they are in a situation to justify an alleged libel, and also to open the eyes of the public to the corrupt system which prevails at our hospitals in the distribution of patronage, though I was not permitted to enter fully into this part of the case. But, Sir, greatly as I deprecate and detest the system of nepotism, to which, I believe, Mr. B. Cooper is indebted for his situation, I entertain, equally with yourself, and the gentlemen whom you represent, no kind of hostility towards that gentleman. On the contrary, I respect his private character, and I would rather not, therefore, at present attend a festival, which, though instituted entirely upon public grounds, malevolence might perhaps construe into an act of persecution directed against his private interests. If the object of the festival were to celebrate the *triumph* of surgical reform, I should be proud and happy to attend. But though the victory is, I believe, in our hands, the battle is still to be fought. I trust, however, the day is not far distant when we may meet to celebrate, not the virtual defeat of a few individuals, but the complete and final overthrow of a corrupt system.

In conclusion, permit me to express my deep sense of gratitude towards yourself, and the gentlemen with whom you are acting, for your very flattering and distinguished approval of my efforts in the noble and thriving cause of Surgical Reform.

Your obliged and obedient Servant,

James Paty, Esq. THOMAS WAKLEY.

THE LANCET.

LONDON: SATURDAY, FEBRUARY 2, 1907.

The Harvest of the Sea.

PROBLEMS connected with the harvest of the sea must necessarily attract the attention of all those interested in the world's food-supply. HUXLEY once said that the productivity of the sea was so great that man's influence on its wealth was scarcely worthy of regard by comparison, and yet the experience of the past 25 years has shown, at any rate for certain seas, and notably the North Sea, that man's influence is not by any means without serious effect. In the North Sea there has been an enormous development of trawl-fishing and there are statistics which distinctly indicate that the plaice, the haddock, the sole, and the turbot have diminished, not only in regard to total catch but in regard to size also. Concerning the sole and the turbot in particular an analysis has revealed an unmistakeable decrease as regards the total quantities caught in the North Sea, while the quantities of the large fishes have continually decreased, and the quantities taken of the small have not sufficiently increased so as to maintain the total quantities at the same uniform level. There are, of course, a number of circumstances besides over-fishing which probably contribute to this result; there are the peculiar habits of the fishes themselves to be taken into account, there may be changed physical conditions or stresses of weather which have led the fishes to change their habitat, or it may be that the vast catches of undersized fishes are reducing the piscatorial productiveness of the sea. Whatever the real reason may be the fact that the harvest of certain fishes is year by year getting less bountiful is a serious outlook, especially for this country, and presents a problem which, bearing in mind the great importance of this auxiliary food-supply to the community, it is our duty to try to solve. It is interesting to recall also that a fish famine not many years ago seriously diminished the supply of cod-liver oil.

Common sense has taught us what is the result of neglecting to study the conditions of the land which are favourable to the cultivation of food-yielding plants and animals. Scientific methods are now available as a powerful aid indicating what should be done in order that where one blade of grass formerly grew two or more might be induced to grow by scientific treatment of the soil. If we have profited by utilising the experience and the results of scientific investigation as applied to increasing the productiveness of the soil, surely we may profit also by applying similar principles to the sea. Fish occupies a very important and valuable place in our supplies of food and it is hardly reasonable to suppose that the enormous catches year by year can be taken without ultimately affecting the yield, at any rate in the immediate neighbourhood of our shores. It is, of course, hardly conceivable that the productivity of the whole world's ocean would be materially affected by the fishing operations, extensive though they may be, which are confined to the shores of the small islands which compose Great Britain. But it should be remembered that the fish-supply of this country is very largely dependent upon the success met with by our home fisheries, and this fact affords a sufficient reason why the study of the economy of the sea should be pursued vigorously in this country and the knowledge so gained applied without loss of time. We do not forget, however, that this study has already been well begun and with the most encouraging prospects, but the organisation of inquiry has been so far on too small a scale and the scope of the investigation is enormously wide. Results of the most interesting and practically important kind have been gained for us by the admirably directed efforts of the Marine Biological Association of the United Kingdom, by the Lancashire and Western Sea Fishery Committee in association with the Liverpool Marine Biology Committee, and by the Irish and Scottish Fishery Boards, while fortunately we possess an Association of Economic Biologists, which held its fourth annual meeting at Cambridge a week or two ago and at which one at least important paper bearing upon the study of the economy of the sea was read and discussed. The British Government, however, offers very little practical encouragement to workers in the field of marine research. It possesses a Board of Agriculture which is doubtless a source of some scientific help to farmers of the land but there is no department which is concerned in helping to maintain the harvest of the sea. There is no substantial Government aid offered which is calculated to promote the study of marine life and environment, to throw light on which may ultimately mean the preservation of one very important source of food-supply.

To do the Government justice, however, it was on the occasion of the formation of an international council at Copenhagen in 1902 for the study of the sea that it was decided to appoint British delegates who were instructed to report from time to time on the work of this international council. These delegates published their first report some time ago and it has recently been succeeded by a second contribution in the form of a Blue-book which amounts to a review of the organisation of the scientific and practical work of the international investigations, and of the methods, means, and results, in so far as these have assumed a definite character at the present time. We have nothing but admiration for the splendid organisation which has been formed and for the extraordinary tact with which each section of the investigation has been allotted to each special investigator. Amongst these it is pleasing to see the names of some well-known English authorities. In order to reap practical results as soon as possible it was decided to concentrate the biological investigation of the first years on certain practical and important problems, and the first objects of investigation were (1) the migrations of the

principal food fishes of the North Sea fisheries, especially of the cod and the herring; and (2) the question of over-fishing in waters mostly fished by British, Dutch, German, and other trawlers, with special regard for the plaice, sole, and other flat fish, as well as the haddock. Meantime the periodical and other variations of the Atlantic currents and their bearing on meteorological and biological phenomena have been studied, the marine organisms (the food of the fishes) have been taken at various stations and by trade steamers and investigated, the composition of the sea water in relation to its constituents which support marine algæ has been brought to light, the occurrence and the distribution of the eggs and various age groups of the food fishes have been examined, fishes have been marked and caught again after a time and inspected, and so forth. Thus may we arrive at the determination of the questions as to how the fish nourishes itself, reproduces its kind, whether over-fishing is going on, whether a fish is stationary or migratory, whether an influx from one sea is occurring to compensate for the fishes removed from another, whether oceanic currents or changes of temperature have any bearing on migration, and other equally important questions, the answer to which must have results of far-reaching importance to the fishing industry and to the community generally. The whole scheme is aiming at exact knowledge and the progress so far made affords a fascinating study and is of a most instructive kind. The extraordinary migratory movements of the plankton, the organisms of the sea, promise to give the best clue as to the movements of their consumers. The rôle therefore played by the plankton in the economy of the sea is probably pre-eminent in importance in regard to the immediate object of the inquiry. The growth of plankton, it would appear, must be localised; in other words, food must be found and located for the fishes, just as the grasses, by the fertilisation of the soil, must be stimulated to bring forth abundantly in order that our sheep and cattle may thrive. "The production of plant substance in the sea," writes Professor BRANDT, "may be compared with that on land by arranging the chemical composition as to quality and quantity along parallel lines. We may determine how much organic substance in general and in particular how much albumin, fat, and carbohydrates are formed per unit of surface during the course of the year on the one hand for land (i.e., pasture), on the other hand for water. The two more closely studied main groups of plankton flora, the Peridineæ and the diatoms, are very nearly related in composition to the best forage, and in autumn the plankton of Kiel Bay has, in general, almost the same composition as pasture."

It is doubtful whether any previous scientific research has ever assumed the colossal proportions of this fisheries inquiry and certainly there never has been such a splendid example of the value of scientific international coöperation. An intensely interesting series of scientific experiments is being conducted by clever and skilled men representing all nations. The questions thus being so carefully studied are the concern of the whole world and the wish that success will crown these inquiries must be universal. The sea will then be fished on rational and not empirical lines and an unfailing and constant source of food-supply will, it is hoped, be the reward.

The Actions of Pituitary Extract.

A MOST fruitful field of investigation in physiological research has been opened out in recent years by the study of the interactions of the various organs of the body. On the one hand, it has enriched physiology by the elucidation of the so-called internal secretions and the more recently discovered group of hormones, while on the other hand it has yielded to medicine valuable information as to the pathology of certain obscure diseases and also therapeutic agents of proved value in thyroid extract, adrenalin, and other substances derived from glandular organs. A considerable amount of attention has been directed to the pituitary body in order to determine whether it forms some internal secretion and two views have been suggested as to its functions, one being that it produces a secretion analogous to that of the thyroid body and that it may act vicariously for that organ, and the other that it exerts some ill-defined influence upon the nutrition and growth of the extremities, especially of their bony framework.

An important paper has recently been communicated to the Royal Society by Professor E. A. SCHÄFER and Dr. P. T. HERRING[1] containing a record of some interesting experiments on the action of pituitary extracts upon the kidney. As the outcome of their research they suggest that the internal secretion of the infundibular portion of the pituitary body is ancillary to the functions of the renal organs. In 1901 Professor R. MAGNUS and Professor SCHÄFER[2] observed after injection of pituitary extract into the veins a marked increase in the flow of urine with expansion of the kidney—a remarkable result when the powerful vaso-constricting effect of the extract is taken into consideration, an effect only inferior to that produced by suprarenal extract. The objects of the research now under consideration were to investigate further this effect, to determine with which part of the pituitary body it was associated, and to study its relation to the substance raising the blood pressure. The extracts used were made almost entirely from the pituitary body of the ox, although in a few experiments extracts were made from the pituitary body of the dog and the cod with precisely similar results. According to Professor SCHÄFER and Dr. HERRING the pituitary body of the ox has the general shape and size of a large cob nut, and consists of two lobes, of which the posterior is the smaller and is imbedded in, and ensheathed by, the anterior, the relations of the two parts being thus somewhat similar to those of the cortex and medulla of the suprarenal body. There is a curved transverse cleft (the intraglandular cleft) separating the two lobes except near the circumference, which renders it an easy matter to shell out the posterior lobe and to obtain it separately when it is found to be relatively small, weighing only a few grains. It was shown by HOWELL that the substance acting upon the heart and blood-vessels is confined to the posterior lobe, and this is demonstrated to be true as regards the diuretic effect of the extract by the present research. As pointed out by the writers in their paper, this is the more remarkable because the anterior lobe presents an obvious glandular structure, consisting of masses of

[1] Philosophical Transactions of the Royal Society of London, Series B, vol. excix., pp. 1-29, 1906.
[2] Proceedings of the Physiological Society in Journal of Physiology, vol. xxvii., p. 9.

epithelial cells which in places surround a lumen or line a cyst-like cavity, while the posterior lobe is composed mainly of a tissue which resembles the grey matter of the nervous system containing many glia cells and, perhaps, a few nerve fibres and nerve cells. The extract used was prepared from the posterior lobes of a number of glands dried at the atmospheric temperature. The dried substance so obtained appears to retain its active properties for months or even years, and for use one part of the dried material was boiled with 100 parts of Ringer's solution and filtered. This extract is referred to as the 1 per cent. aqueous solution. Previous extraction of the dried material with alcohol or ether does not seem to diminish the activity of the saline extract prepared as above described.

The effect of the injection of such an extract upon the heart and blood-vessels, producing a general constriction of the arterioles with a marked rise of blood pressure, was shown by OLIVER and SCHÄFER[3] and confirmed later by HOWELL,[4] who also showed that the rise of blood pressure occurs in spite of a marked cardiac inhibition which may also be produced. He further observed the peculiar fact that a first dose of any magnitude confers an immunity as regards any effect on the heart or blood-vessels to a second dose given within 30 to 60 minutes; indeed, it was subsequently shown by SCHÄFER and SWALE VINCENT that a fall of blood pressure may be produced by second and subsequent injections and that the rise of pressure produced by the first injection may in some cases be preceded by a slight fall. The explanation offered by the last-mentioned observers was that the pituitary extract contained two substances having opposite effects (pressor and depressor), the former overcoming the latter usually in the first injection, while with subsequent ones a reversal is obtained. There are, as can readily be seen, certain resemblances in the action of pituitary extract to that of suprarenal extract, but they are certainly not identical, since the vascular contraction and cardiac inhibition obtained with pituitary extract are much more prolonged than those with suprarenal extract; moreover, the immunity to a repeated dose occurs only with the pituitary substance. Again, suprarenal extract acts as a general excitant of all glandular and muscular tissues that are innervated by the sympathetic system, which is not the case with pituitary substance. The most striking difference is, however, in relation to their effects on the kidney; for while suprarenal extract produces a marked constriction of the renal vessels and cessation of the flow of urine, pituitary extract produces dilatation of the vessels of the kidney and an increase in urine, sometimes preceded by a temporary diminution or cessation with or without a temporary shrinkage of the volume of the kidney. That this increase in urinary flow is not at any rate altogether due to the rise of blood pressure is proved by the fact that with second and subsequent injections the diuretic effect is still marked, although there is usually a fall of blood pressure—in other words, the immunity to second injections noticed with regard to the pressor and cardio-inhibitory effects of the extract does not extend to its diuretic action, which would seem also to suggest that it is due to a separate chemical substance. Another peculiarity is that the increased flow of urine is prolonged, lasting long after the general vascular influence of the extract has passed off, while an interesting fact noticed in some animals is the prolonged period of latency which sometimes intervenes between the injection and the diuretic effect, which may extend to several minutes. It is also stated that the effect upon the kidney is not proportional to the amount given; indeed, within certain limits the kidneys seem to respond more readily to a small than to a large dose of the extract, a fact which the writers suggest is in consonance with the view that the pituitary body produces a secretion which is discharged into the blood and subserves a diuretic function. The effects of hypodermic injection and of injection of the substance into the stomach yielded somewhat indefinite results. On treatment of the pituitary substance with hydrogen peroxide it appeared that the substance acting on the blood pressure was rendered inert, while the diuretic substance was not affected. Reducing agents, on the other hand, apparently have no influence on any of the active constituents of the extract. The extract was not found to exert a similar action upon glands other than the kidney, its activity in promoting secretion being apparently confined to that organ. Professor SCHÄFER and Dr. HERRING conclude that the diuretic activity of this substance is far greater than that of any substance in the pharmacopœia, and since by its actions on the vascular system it tends to produce an optimum condition for renal activity and apparently in addition to exert a specific stimulation upon the renal epithelium, it is regarded as probable that its chief purpose is ancillary to the function of the kidneys. They further draw attention to the similarity in development, structure, and functions between the suprarenal and the pituitary bodies. Both occur in all vertebrates and each consists of two parts, one being a highly vascular epithelium and the other being of neuro-ectodermic origin; in neither are extracts from the epithelial and more obviously glandular portions active, whereas the neuro-ectodermic parts yield powerful substances. It is suggested that in both organs the active substance passes through certain stages of its formation in the epithelial part and is altered to its active condition in the neuro-ectodermic part.

These interesting and important researches are obviously of great practical importance and deserve careful consideration at the hands of clinicians and pathologists, for, as the writers suggest, it will be of interest to know whether diabetes, and especially diabetes insipidus, is associated with hypertrophy of the pituitary body. Moreover, the substance may prove to have a field of therapeutic usefulness.

[3] Journal of Physiology, 1895, vol. xviii.
[4] Journal of Experimental Medicine, 1898, vol. iii.

Reminiscences of the Liverpool Lock Hospital.

IN the January number of the *Liverpool Medico-Chirurgical Journal* Mr. FREDERICK W. LOWNDES has given an interesting account of the Liverpool Lock Hospital and he has described the large amount of work which was there done. Soon after the first Liverpool Infirmary was opened in 1749 some 75 beds were set apart for the treatment of venereal disease. When the second Liverpool Infirmary was built in 1824 it was found that the demands on the available space were so great that there was no room in it for venereal cases. The need for accommodation for these cases was

met by the opening of the Liverpool Lock Hospital in 1834. In the venereal wards of the infirmaries and in the Lock Hospital much good was done not only for the patients but for our knowledge of venereal disease. Even in the early days of the Liverpool Lock Hospital the idea still existed that gonorrhœa and syphilis were identical, and it can hardly be doubted that the chief factor in the persistence of this opinion was the experiment in which JOHN HUNTER in 1767 inoculated himself with gonorrhœal pus and yet suffered from all the manifestations of syphilis. We now know that there was some error in the conditions of the experiment; probably the patient from whom the gonorrhœal pus was taken was also affected with syphilis. It took some years of observation to disprove this supposed identity and until this was done gonorrhœal cases were regularly salivated but in vain. When gonorrhœa had been definitely separated from syphilis there still remained the confusion of the hard and the soft chancre, and the confusion was very excusable, for occasionally the two poisons are inoculated on the same spot at the same moment and so the two sores are combined. It is easy for us with our present knowledge to recognise how the two may usually be distinguished but it must have been exceedingly difficult for those who worked at the subject to arrive at the truth.

Mr. LOWNDES studied at Liverpool from 1860 to 1863 and then he went to Edinburgh. At Liverpool he had seen the beneficial results of the careful administration of mercury. At Edinburgh he heard Professor HUGHES BENNETT who taught that mercury was useless in syphilis and should not be given. In opposition to this opinion Dr. THOMAS EDWARD BEATTY maintained that infantile syphilis and syphilis in married women were almost all due to lack of mercurial treatment of the husband, and with this opinion Mr. LOWNDES agrees. In 1875 he was elected surgeon to the Liverpool Lock Hospital and his experience since that time has only served to deepen his sense of the value of mercury in syphilis. He sees no need, and in this we agree with him, for patients to go to Aix-la-Chapelle for the treatment of syphilis as they can be perfectly treated in this country. When, however, a patient will not devote himself to his treatment but allows business or pleasure to interfere with it, then the regular habits at Aix-la-Chapelle, freedom from worry, and thorough treatment which cannot well be avoided, will often effect a cure which might otherwise have failed of accomplishment. With the year 1898 Mr. LOWNDES's active work at the Liverpool Lock Hospital came to an end and he was appointed consulting surgeon and at the same time the reception of in-patients ceased. It is a curious result of the modern spirit that the number of beds for venereal cases in this country is steadily getting less, though there is no visible decrease in the number of cases; there is a feeling that to provide for the treatment of venereal cases is to encourage vice. No attention is paid to the fact that many cases of syphilis occur in those who do not owe it to any vicious act. To allow syphilis and other venereal diseases to go unchecked because the majority of the sufferers from these diseases have transgressed is very unwise. The health of the nation as a whole suffers. As medical men we must not look to the manner in which a disease may have been contracted; we have to treat the diseased condition. As well might a physician refuse to treat a patient with cirrhosis of the liver because the man's own self-indulgence had caused his sickness. It is often possible at the same time to add a "word in season" that may prevent a recurrence of the vice through which the disease arose but to diminish the amount of disease in the community is our main duty. The more thorough treatment of syphilis and other venereal diseases would go far to diminish the deterioration from which certain sections of the nation suffer and need in no way lead to the increase of vice.

Annotations.

"Ne quid nimis."

COOKING BY GAS: IS IT INJURIOUS TO THE MEAT?

THERE are some people who state that they can easily tell whether meat has been cooked by gas. They not only can see differences in the appearance of the meat but can also discern a peculiar taste for which the products of combustion of gas are in their opinion accountable. Cooking by gas by the method which is nearest to that known as roasting in front of the coal fire is generally conducted so that the meat is exposed to the direct heat of the gas flames, and the products of combustion sweep the surface of the joint. The gas-cooker is, in fact, merely a closed chamber or oven provided with a suitable number of gas-burners. An exit is commonly provided in order to allow for the escape of these products and hot air is necessarily circulated through the gas oven. If the cooking were done by the gas oven being heated on the outside it is difficult to see why such a process should be different in any respect from that in which the cooking is done in the ordinary range oven heated by a coal fire. The question narrows down, therefore, to a consideration of the effects which the products of gas combustion, whether they be complete or incomplete, are likely to have upon the meat. We may thus count upon the exposure of the meat to small quantities of such incomplete products of combustion as carbon-monoxide, acetylene, and sulphurous acid, and to the complete products carbon-dioxide, steam, and traces of sulphuric acid. It is well known that during the cooking of meat by whatsoever process the meat loses weight or, in other words, there is a constant emission of vapour, and consequently it can hardly be supposed that absorption can be going on at the same time. But assuming that not to be the case, what effects is the bombardment of small quantities of carbon-monoxide, acetylene, and sulphurous acid likely to have on meat and would these effects render the meat less suitable for food? Both carbon monoxide and acetylene form molecular combinations with the colouring matter of the blood, but then at the high temperature of the cooking process it is hardly conceivable that such a combination could take place, besides which a plentiful supply of air would prevent either carbon-monoxide or acetylene from being permanently absorbed. The minute quantity of sulphurous acid would tend to bleach the colour of the meat, but as a rule no effect of this kind is observed. If sulphuric acid is formed this at a high temperature might possibly char slightly the surface of the joint. All such speculations, however, are strongly discounted by the fact that meat during its cooking is emissive and not absorptive. As to steam and carbonic acid, it is questionable whether they could have any depreciatory chemical action at all. The conclusion seems inevitable, therefore, that any differences that are shown between meat cooked in front of the fire or

is an oven next to the fire and meat cooked in a chamber containing gas flames inside must be due entirely to physical and not to chemical causes. In a word, the explanation must lie in the different manner in which the heat is applied in the different circumstances. It should be borne in mind, however, that in cooking by gas the meat is exposed to a rapid current of steam derived from the combustion of the gas, whereas in the range oven the only steam present is that which comes from the meat itself, while in open roasting in front of the fire there is no atmosphere of steam round the joint at all, the air is free to play over its surface, and the cooking is done by radiated heat. We believe the process of open roasting is far superior to that of close roasting, the flavour of the meat so cooked is invariably better and the tissue itself is generally more tender when it is cooked by roasting, and, consequently, more digestible. We are inclined to put forward the view that the cooking of meat by gas is less satisfactory than cooking by the open roast method, because in the former case the joint is cooked partly by ascending heat currents and partly by steam. According to this view cooking by gas may be regarded as a hybrid process, that is to say, part boiling or steaming and part roasting. The constant stream of steam over the surface of a joint of meat is calculated to extract some of its flavour and to exert a toughening effect on the tissues of the meat. We do not think, however, that any difference between the effects of gas-cooking and cooking by roasting or in the range oven can be regarded in a serious light from a point of view of dietetics. The differences in our opinion are due entirely to different physical conditions under which the meat is cooked, and we may safely exonerate, we think, the gas-cooker from any suspicion of poisoning the meat by reason of the escape of unconsumed gaseous products from the gas flame. The process of grilling meat exposes that food to a torrent of incomplete products of combustion compared with what happens in the gas-cooker, and yet a grilled chop is very popular, "the taste of the grill" (the sulphurous acid and perhaps a little smoke) being held in esteem; but the gases round the chop in this case do not contain anything like the proportion of hot aqueous vapour which is present in the gas-cooker.

TYPHOID SPONDYLITIS WITH BONY CHANGES.

TYPHOID spondylitis is a rare sequel of typhoid fever which manifests itself during convalescence by painful stiffness, swelling, and tenderness of the lumbar spine. It appears to be due to serous inflammation of the periosteum and adjacent structures (perispondylitis). In the *American Journal of the Medical Sciences* for December, Professor Thomas McCrae of the Johns Hopkins University has shown that definite bony changes may result—a fact which does not appear to have been observed previously. He reports the following case. A man, aged 28 years, was admitted into hospital on July 4th, 1904, complaining of a stiff and painful spine. On Jan. 2nd he took to bed with a moderate attack of typhoid fever. Early in March, while convalescent, he awoke one night with severe pain in the back and had to lie flat because any attempt to rise caused acute pain in the lumbar region. Since that time his spine had been stiff. At the end of March he was able to sit in a chair and at the beginning of April he began to walk. During this time his back was stiff but not particularly painful except on movement of the lower part of the spine. His health gradually improved but the spinal condition grew worse and any exercise caused much pain. On admission there was almost constant pain in the lower part of the back and down the thighs. The patient was well nourished and his colour was good. The abdominal muscles resisted palpation. The spine was held perfectly straight and there was practically no curve in the lumbar region. When the patient had to sit up he pulled himself up with his hands and kept his spine as stiff as possible. He had great difficulty in standing and assumed a characteristic attitude with his hands on his thighs. It was difficult to test any movement of the spine as the patient could not be induced to bend forwards or backwards, but lateral movements to the right seemed less than those to the left. Stooping was done with a stiff spine and on rising the patient "climbed his legs." On the day after admission Widal's reaction was well marked. At times the patient complained of severe spasms in the muscles of the back. A spinal jacket was applied but seemed only to make the condition worse and large doses of sedatives had no effect on the pain. On July 10th the temperature, which had been normal since admission, rose to 102° F. The pain became more severe and there was marked rigidity of the muscles of the back. The knee-jerks could not be obtained. The fever continued in a rather irregular manner, the temperature varying from normal to 104°. On the 15th rose-spots were seen but the spleen could not be felt. The temperature became more regularly elevated, the tongue became furred, and the lips became dry. The patient lay with his knees drawn up and there were frequent spasmodic movements of the abdominal muscles. The area of splenic dulness increased. There was slight prominence of the spinous processes of the second, third, and fourth lumbar vertebræ, on each side of which there was some fulness. Over these areas the patient constantly complained of pain. On the 18th he was more comfortable and on the 29th the temperature became normal and there was little pain. On August 15th he could sit up in bed. He soon got up and was discharged on Sept. 8th with no deformity or tenderness but he could not bend forwards or backwards. He held his spine rigidly and still when he stooped "climbed down his thighs." A radiogram taken on July 5th showed on the right side between the second and third lumbar vertebræ a deposit of bone filling an intervertebral space, apparently deposited in the lateral ligament. In the three months following his discharge recovery progressed. He was able to run and to jump as well as ever but stiffness, lasting a few minutes, occurred in the lumbar region after remaining in the bent position for some time, which was evidently due to contraction of the muscles. The fever, which occurred six months after the original attack and four months after the onset of symptoms of "typhoid spine," might be regarded as due to the bone lesion or to a relapse or second attack of typhoid fever. Its duration of 19 days, the general appearance of the patient, the rose spots, and the increased splenic dulness point to the conclusion that it was a relapse or second attack. Professor McCrae also reports a case of spondylitis in paratyphoid fever in which radiography showed a deposit of new bone between the fourth and fifth lumbar vertebræ on both sides.

THE CHANGEABLE WEATHER.

IT remains to be seen what will be the full effect on the public health and the death-rate of the recent sudden return to winter in the United Kingdom. If violent changes are as pernicious as they are generally supposed to be the returns of the Registrar-General during the next week or so will show a lamentable increase in the death-rate in all parts of these islands. Until Monday, Jan. 21st, the month had been mild, with an equable temperature and humid air. The thermometer rarely failed to rise to nearly 50° F. during the afternoon, frost was scarcely ever seen even on the ground and although the wind blew almost continuously from the south-west or the west there was extremely little rain. The change to winter commenced during Tuesday, when the drop of temperature during the day was all the more trying on account of the strong easterly wind by

which it was accompanied. It was indeed this strong easterly blast which swept across England from the Arctic regions of Europe at the average rate of between 30 and 40 miles per hour during Tuesday and Wednesday that made the cold appear so abnormal. With a comparatively calm atmosphere a temperature much lower than that actually experienced can be borne by an ordinary individual with little or no suffering and it is also easy to maintain even the most draughty and dilapidated dwellings at a fairly comfortable temperature. But with the air rushing along from the east with the force of half a gale every crevice is penetrated and thousands of houses and hundreds of thousands of tenements are rendered almost as uninhabitable as the street. From the point of view of the meteorologist the Arctic weather has been of peculiar interest because of the abnormally high barometer. In the north of this country the mercury rose to above 31 inches, while in the Baltic provinces of Russia the highest point reached was as high as 31·58 inches. Never during the past 25 years has the atmospheric pressure been so intense in Europe generally, although the barometer has on more than one occasion risen to above 31 inches. The height of 31·58 inches, recorded at Riga, is within 0·15 inch of the world's record barometer reading which occurred in Siberia in 1877. On the afternoon of Sunday, Jan. 27th, the temperature rose and by 11 P.M. had reached 41°, the barometer having begun to fall on the night of Saturday, the 26th.

DIAGNOSIS OF THE SOURCE OF HÆMATURIA.

IN the *Boston Medical and Surgical Journal* of Jan. 10th Dr. A. L. Chute has contributed a useful article showing how cystoscopy has overthrown some of the time-honoured rules for the diagnosis of the source of hæmaturia. Renal hæmaturia differs from urethral hæmaturia in that it is always "total"—that is, the blood is intimately mixed with all the urine but it cannot be distinguished by the appearance of the urine from vesical hæmaturia. It has been taught that the colour of the urine in hæmorrhage from the kidney is dark and in hæmorrhage from the bladder bright red. It is true that in renal hæmaturia the colour is more likely to be dark than bright red but there are so many exceptions that the rule cannot be relied on. Two facts are of considerable value in determining the source of hæmorrhage. If the urine contains a considerable number of cylindrical clots probably the bleeding arises from above the bladder, though occasionally longish clots which have some resemblance to ureteral casts are seen in vesical hæmorrhage. The presence of renal casts points to renal hæmorrhage. The probability is increased if there are numerous casts with adherent blood corpuscles. But while these signs are of considerable positive value their absence is of no negative value. Cystoscopy is the only accurate means of diagnosing between vesical and renal hæmaturia. If the hæmaturia is considerable and of renal origin coloured urine may be seen issuing from the ureteral orifices in little puffs not unlike puffs of smoke. If the hæmorrhage is slight it may be impossible to determine from which ureter it comes without ureteral catheterisation. The assumption that blood seen issuing from a ureter comes from the corresponding kidney is in the main correct, but it may come from the ureter itself. Having localised the hæmaturia the disease which produces it remains to be diagnosed. For this purpose the other symptoms must be considered. A large proportion of cases of renal hæmaturia depend upon one of four causes—malignant disease, calculus, tuberculosis, or chronic nephritis. Rarer causes are hydronephrosis, moveable kidney, cysts of the kidney, and hydatids. The fact that chronic nephritis may produce hæmaturia has been appreciated only recently. The hæmaturia usually is intermittent and may last a long time. In only a few cases has hæmaturia been proved to be of ureteral origin but such cases appear to be more frequent than has been supposed. Calculus is the best known cause of ureteral hæmaturia. Malignant growths of the ureter are very rare. Excepting hæmaturia due to calculus, the causes of ureteral hæmaturia cannot be diagnosed at present. Catheterisation of successive sections of the ureter is the only way of distinguishing ureteral from renal hæmaturia.

DEATH OF SIR MICHAEL FOSTER.

WE regret to announce the death, which occurred on Tuesday last, of Sir Michael Foster, the famous professor of physiology in the University of Cambridge. Medicine owes a heavy debt to him as the author of the brilliant "Text-book of Physiology" and as one of the best theoretical and practical teachers of his subject that our schools have ever known. We shall publish an extended notice of his life and work in an early issue.

THE BRITISH SCIENCE GUILD.

AT the annual meeting of the British Science Guild, which was held at the Mansion House on Jan. 28th, Sir Norman Lockyer, F.R.S., announced that very satisfactory progress had been made during the year, which was the first year of the guild's existence. There were 599 members, of whom 344 were life members. The proposal to create a new class of member to be called a Fellow was carried unanimously. Mr. Haldane, M.P., in the course of an interesting speech, urged the claims of the guild on the attention of the community, adding that the aims of the organisation were to promote the prosperity and trade of the country by insisting on the application of scientific principles to industrial processes. It was encouraging, however, to observe that the scientific spirit showed distinct growth, and in spite of opposition science was gradually being infused into educational methods.

MERCURY SALICYLATE IN THE TREATMENT OF SYPHILIS.

THE method of treating syphilis by intramuscular injections of insoluble preparations of mercury in suspension has somewhat waned in popularity of late. A favourable account of the use of mercury salicylate is given by Dr. W. H. Palmer in the *Boston Medical and Surgical Journal*, 1906, No. 17. Mercury salicylate contains approximately 50 per cent. of mercury, it is insoluble in water, and is administered in suspension in liquid paraffin. The initial injection should contain half a grain of the salt or five minims of a 1 in 10 suspension. After two days a second injection of three-quarters of a grain is given and four days later the dose is increased to one and a quarter grains. Dr. Palmer has administered over 800 injections of the drug and in 75 per cent. of the cases a one and a quarter-grain dose given every seven days was sufficient to produce satisfactory results. In America it is customary to give a course of the injections for two years; after an interval of a few months the treatment is resumed for six months or a year. The liquid paraffin should be sterilised, otherwise painful nodosities may occur at the seat of injection. The needle should be sterilised by immersion in a mixture of alcohol and ether. The patient should lie face downwards, as in this position the gluteal muscles are more relaxed and in case of syncope, which may occur at the time of the initial injection, the position is a favourable one. The fluid is injected about 1 to 1½ inches below the surface, after which the seat of the injection is massaged for about 15 minutes to prevent the development of nodosities. Dr. Palmer considers that mercury salicylate has advantages over

all other preparations of mercury for intramuscular injection. When given by injection or by the mouth it does not produce gastric irritation, diarrhœa, colic, or other unfavourable symptoms, such as are produced by the other insoluble preparations of mercury. It very rarely produces abscesses and the nodosities that sometimes develop at the place of injection disappear within a few days without treatment. Owing to its slow conversion into a soluble form a considerable quantity of the drug can be injected at one time. Of the other preparations that have been employed perchloride of mercury is no more efficacious, causes much pain, produces abscesses, and the injections require to be repeated more frequently. Calomel and the yellow oxide of mercury both have the disadvantage of setting up a severe local reaction after injection. Dr. Palmer states that in rare instances unfavourable results have followed the employment of mercury salicylate, due to a pulmonary embolism produced by the introduction of the injection into the circulation when the needle penetrates a vein. Again, in about from 20 to 30 seconds after the injection the patient sometimes experiences a dry cough, accompanied by a sensation of tightness in the chest, faintness, nausea, and air hunger. The cough usually persists for some days, during which time the sputum may be tinged with blood.

FILTHY WOOL-FLOCK BEDS.

Mr. Peter Fyfe has contributed to the *Journal of the Royal Sanitary Institute* for January further evidence of the danger of common bedding to the public health. Four new wool-flock beds were bought in Bristol and Glasgow, at prices ranging from 7*s.* 6*d.* to 10*s.* 6*d* each, and portions of the flock have been examined bacteriologically by Dr. R. M. Buchanan and chemically by Mr. F. W. Harris. The flock of the four beds contained respectively 3, 10½, ½, and 22 million organisms per gramme, comparing very badly with crude Glasgow sewage which contained about 197,000 organisms per gramme. A high proportion of soluble matter was present, the flock of one of the beds, weighing 36 pounds, losing 5½ pounds in weight when washed with 40 gallons of water. In all cases the washings on analysis compared unfavourably with crude Glasgow sewage. The latter absorbed 3·095 grains of oxygen per gallon in three minutes; the minimum corresponding figure for the washings from the flock bedding was 4·24 grains. The corresponding figure for each of the other three washings was more than double this amount. In each case the amount of albuminoid ammonia in the washings exceeded that present in crude sewage. Experiments were carried out to determine the effect on the atmosphere of a room of making an ordinary flock bed in a number of clean dwelling-houses. Agar culture plates were exposed in the rooms before and after the beds were made by the housewives in the usual way. Dr. Buchanan found an increase in the number of bacteria in the air of each apartment as the result of making the beds, the number being increased 30 times in the case of the cheapest bed and 230 times in the case of a bed which had been bought at second hand, while the atmosphere was rendered disagreeable in both apartments. The making of a number of more expensive beds produced only a relatively small increase in the number of organisms in the atmosphere and there was no perceptible odour or dust. As Mr. Fyfe points out, hundreds of thousands of persons in this country are constantly sleeping upon stuff which, after rinsing in a large volume of water, yields a liquid containing more putrescible organic matter than ordinary sewage, and more total solids, to say nothing of colour, than are allowed in effluents into rivers. Further, the presence of such filthy bedding in houses is a constant menace to the purity of foodstuffs, especially to milk, meat, and soup, for the storage of which there is seldom proper accommodation in those houses in which cheap bedding is to be found. The bacteriological examination of the flocks has not yet been completed but sufficient evidence has been produced to demonstrate again the pressing urgency of legislative measures to prevent the continued sale of loathsome bed-stuffing.

THE VALUE OF SODIUM CITRATE IN DYSPEPSIA.

ACCORDING to Dr. L. Lacheny, writing in *La Semaine Médicale*, Nov. 7th, 1906, sodium citrate gives favourable results in the treatment of dyspepsia in adults, especially in cases of gastric pain, occurring three or four hours after a meal, followed by vomiting. He prescribes a 10 per cent. solution of the salt in tablespoonful doses (*cuillerées à soupe*), to be taken every five minutes from the time when the pain and sickness commence until they cease. The average dose required to give relief is from 30 to 60 grains; occasionally a dose of 15 grains will suffice, while in some cases it is necessary to give as much as 120 grains. In case of a relapse the treatment should be renewed, with the result that the symptoms frequently disappear in a few days In 14 cases treated in this manner seven were cured in eight days; one patient, however, was under treatment for three weeks and two others for a month before a satisfactory result was obtained. The other patients were benefited by the treatment; one of these, suffering from ulcer of the stomach, experienced considerable amelioration of the pain from the administration of 45 grains of sodium citrate every day for 37 days.

THE RELATIVE SIZE OF THE MATERNAL PELVIS AND OF THE FŒTUS.

IN THE LANCET of Jan. 19th, p. 150, Captain J. C. Holdich Leicester, I.M.S., recorded the results of some observations on the above subject. He was led to an investigation of this matter by reading a paper by Captain Clayton A. Lane, I.M.S., published in THE LANCET of Sept. 26th, 1903, p. 885, entitled "A Clinical Comparison of the Maternal Pelvis and of the Fœtus in Europeans, Eurasians, and Bengalis." Captain Leicester's observations were carried out on the same class of women, only on a considerably larger scale. At the time of the appearance of Captain Lane's paper we considered the matter in a leading article and pointed out that the results obtained by him, which he ventured to enunciate in the form of a provisional law—namely, that "The child grows in utero in such a manner and at such a rate that at full term its size is proportional to that of the mother's pelvis through which it has to pass in order to be born," were not in accordance with the teaching of such authorities as La Torre, Budin, and Pinard, who had shown that the fœtus acquires the same development and size in contracted pelves as in normal pelves. The figures given by Captain Leicester are founded on a much larger series than those of Captain Lane—viz., on the measurements of 941 pelves and 699 full term children. The conclusions at which he arrives are such as might be expected in this matter and differ considerably from those of Captain Lane. The well-known fact that the average interspinous and intercristal measurements bear no relation to the length of the conjugate diameter is clearly shown, but the figures quoted lend no confirmation to the result obtained by Captain Lane—namely, that as the conjugate diameter increases in size the percentage of the interspinous to the intercristal diameter shows a regular successive diminution. The influence of an increase in the admixture of native blood is shown in the size of the pelvis, thus the Bengali pelvis is the smallest, the East Indian next in size, the Eurasian next, and the European largest of all, with a regular gradation of size in

proportion to the degree of admixture of the native element, such as might be expected. The relationship between the size of the child as gauged by its weight and the size of the pelvis as gauged by the conjugate diameter which Captain Lane believed he had demonstrated by his measurements is not borne out in the results obtained by Captain Leicester, although it is true that his figures show some tendency in the same direction. In a further series of measurements the latter observer has endeavoured to estimate the size and weight of the children of various pregnancies passing through pelves with conjugate diameters of the same length. These results seem to confirm the well-known fact that the children of different pregnancies, even with the same mother, may vary very markedly in size. An investigation of this kind is of value in serving to confirm, although only in a very rough way, the results which have been obtained by the majority of investigators. We do not think that there is much to be gained by an endeavour to distinguish between such small differences as one-eighth of an inch in attempting to measure the conjugate diameter through the abdomen, the method practised by Captain Leicester, and not much reliance can be placed upon any such series of figures, numerous as they are, until they have been confirmed by a much larger series in which the measurements have been taken not by one but by several observers and then averaged. Captain Leicester's paper will be of service if it helps to expose the fallacy, only too common amongst medical writers, of attempting to found general laws upon quite inadequate data.

A LONDON CROWD ON THE ICE.

ANYONE who watched the crowd of skaters upon the Round Pond in Kensington Gardens upon the afternoon of Sunday, Jan. 27th, until the time when those in authority decided to clear the ice will have readily understood why the two terrible accidents which the middle-aged will recall as having happened in the Kensington Gardens before the Round Pond was made shallow and in Regent's Park were fraught with such loss of life. The incident which immediately preceded the ordering of all skaters to leave the ice was similar to others which had taken place earlier and served to demonstrate the recklessness which accompanies inexperience of danger, for probably few of those present either desired immersion or stayed to consider whether the water was shallow or deep. Something happened to attract attention—presumably a skater knocked one of his fellows over, or possibly fell through a hole, or otherwise became a centre of attraction—and immediately from all parts of the broad sheet of ice skaters and sliders, grown-up men and women, and children flocked together to see what had occurred, so that within a few seconds there were gathered in a dense crowd round a spot which for all they knew had just proved unsafe for one, or possibly for a group of their fellows, two or three hundred persons. Skating had not been permitted until the ice was strong enough to stand a strain which, no doubt, the keepers of the garden knew from experience would be likely to be put upon it, but we are inclined to think that the crowd was one which would have acted in a similar fashion had the ice been swaying and bending in every direction, with ten feet of water beneath it. We are inclined to believe also that foolishly as any crowd may behave when a few individuals set the example, those trained to country pursuits would hardly have acted in the same way as those used to the comparative safety of the ordinary Londoner's amusements. Our readers should recommend parents to warn their children against such behaviour on future occasions, for even with a thaw setting in a thorough wetting in icy water may do more than spoil clothes, and in a case of wholesale immersion, such as was likely to follow the scene described, children might easily have fallen under others and have been placed in serious danger. Ice accidents, like boating accidents, have fatal endings before those around have time to realise what is going on, and no one can take up a newspaper when skating has begun without perceiving that the parent who shrinks from denying his child a transitory pleasure may have to reproach himself ever afterwards for his want of prudence or firmness.

THE CHALFONT COLONY FOR EPILEPTICS.

IN the year 1894 the National Society for Employment of Epileptics established the Chalfont Colony. The accommodation was then limited to 13 colonists but it has since grown to be a small village with a population of 200 epileptics. Even with this increase of accommodation the society has to refuse admission to a very large number of eligible persons who would undoubtedly benefit by the treatment were it only possible to house them. Up to the present time adults alone have been received into the colony but if only funds are forthcoming villas are to be built for the reception of epileptic children. The treatment in colonies of this kind is far superior to that which is possible in hospital, for in addition to the necessary medical supervision the patients are taught trades and other ways of earning a livelihood whereby they may become useful members of society. England is still far behind other countries in realising the value of the "colony" system for the treatment of such diseases as epilepsy and certain forms of mental enfeeblement. Nevertheless, experience has taught that they are institutions worthy of the most liberal support and it is to be hoped that the present appeal for the Chalfont Colony will meet with the success which it undoubtedly deserves. We note that contributions are to be sent to the honorary treasurer, Mr. H. Hamilton Hoare, or the secretary, Mr. G. Penn Gaskell, at the offices of the society, Denison House, Vauxhall Bridge-road, London, S.W.

MEMORIAL TO DR. FINLAYSON.

A LARGELY attended meeting of the medical profession and others interested was held in the hall of the Faculty of Physicians and Surgeons, 242, St. Vincent-street, Glasgow, on Jan. 24th, to consider a proposal to perpetuate the memory of the late Dr. James Finlayson who for many years occupied a foremost position in the medical world of Scotland. In the absence of the President of the Faculty, Dr. W. G. Dun, honorary treasurer of the Faculty of Physicians and Surgeons, was called to the chair. Amongst those present were the Lord Provost, Mr. John Wordie, Sir Hector C. Cameron, Professor R. Stockman, Professor S. Gemmell, Dr. D. Yellowlees, Dr. Alexander Robertson, Dr. J. C. Renton, Mr. H. E. Clark, and Dr. A. Freeland Fergus. The Lord Provost proposed, and Dr. Yellowlees seconded, a motion to the effect that a fund should be raised to perpetuate in some suitable manner the memory of Dr. James Finlayson, and this was adopted unanimously. At this stage Dr. Freeland Fergus made a statement to the effect that at a meeting of a few of Dr. Finlayson's professional friends held some little time ago it had been resolved to recommend the foundation of a lectureship. The scheme recommended was briefly as follows. That a sum of money should be gathered together and a trust formed and that the trustees, whenever the accumulated interest permitted, were to appoint a lecturer to give one or more lectures in the west of Scotland and that the lectureship should be called the Finlayson Memorial Lectureship. In this way it would be possible to bring original workers and men of distinction from other places to give the practitioners in the west of Scotland an account of their researches and work.

The lecturer would not be chosen from any particular school or locality; he might be from abroad, or from London, or from Cambridge, or from anywhere else, the essential requisite being that he was a man of first rank as an investigator and that he was in a position to say something of practical value to practitioners. After some discussion it was moved by Mr. Clark and seconded by Dr. Renton that the memorial to Dr. Finlayson should take the form of a lectureship. This was unanimously agreed to and by a large majority it was further agreed that the lectureship should be on medicine and cognate subjects. Thereafter the meeting resolved itself into a general committee to carry out the scheme and an executive committee was elected with Sir Hector Cameron, convener; Mr. Robert Gourlay, LL.D., honorary treasurer, 124, St. Vincent-street, Glasgow; and Dr. Alexander Duncan, Faculty of Physicians and Surgeons, Glasgow, and Dr. Freeland Fergus, 22, Blythswood-square, Glasgow, honorary secretaries.

OVERHEAD WIRES ON TRAMWAYS.

AN action was heard recently before Sir William Selfe at the Brompton county court in which a jury awarded £50 damages to a plaintiff who claimed to have received personal injury through the falling of an overhead wire when travelling on the top of a tramway car. A wire, which undoubtedly fell, did not, according to his version of the occurrence, touch him but fell across the brass rail which ran round the car and with which he was in contact. The dispute in the case arose from the defendants positively denying that the wire which fell could have been a live one and calling their engineer to give evidence to this effect, and from their ascribing certain physical conditions of the plaintiff to his smoking to excess, supporting their contention by medical evidence, whereas medical witnesses for the plaintiff deposed that his symptoms were attributable to the shock which he stated that he had received. The shock itself was declared by the defence to be imaginary so far as electricity was concerned, and to have been due to fright. Whether the jury were right or wrong in their finding in this particular instance it seems clear that a county court jury is not the proper tribunal to weigh conflicting evidence of a scientific character. Such a case as that described could only be dealt with satisfactorily by a judge with the help of a medical assessor.

INTERNATIONAL CONFERENCE OF RED CROSS SOCIETIES.

THE Eighth International Conference of Red Cross Societies will be held in London from June 10th to 14th next, inclusive. The international conferences take place every five years, the last having been held at St. Petersburg in 1902. All Red Cross societies established in countries the Governments of which are signatory to the Geneva Convention are invited to send delegates to the Conference and many have already signified their intention of being represented. Invitations to send official delegates have been forwarded through the Foreign Office to the Governments of the countries in question. The Conjoint Board of the Royal College of Physicians of London and the Royal College of Surgeons of England has placed the Examination Hall, Victoria Embankment, at the disposal of the Conference. Field-Marshal Earl Roberts, K.G., V.C., will act as president of the Conference, and the following reception committee has been formed for the purpose of arranging a suitable programme of social functions for the entertainment of the delegates during the period of the Conference:—The Duchess of Montrose, the Marchioness of Lansdowne, the Marchioness of Londonderry, Georgiana Countess of Dudley, Lady Wantage, Lord Rothschild, Viscount Esher, Viscount Iveagh, Lord Burton, Sir Ernest Cassel, Sir Frederick Treves, and Mr. A. K. Loyd. Provided that a sufficient number of exhibits are entered an exhibition of appliances in connexion with Red Cross work will be held at the same time as the Conference. The "Empress Marie Féodorovna prizes" will be awarded by an international jury for the best inventions tending to lessen the sufferings of sick and wounded soldiers. There are three prizes which will be given out of a sum arising from the interest on an investment of 100,000 roubles, the total amount available for the three 1907 prizes being about £2000. Full particulars of these competitions will be forwarded on application. The business arrangements of the Conference are being made by a committee composed of Mr. J. Danvers Power (chairman), Sir Frederick Treves, and Sir Benjamin Franklin, and all communications should be addressed to the secretary, British Red Cross Society, 9, Victoria-street, London, S.W.

CEREBRO-SPINAL FEVER.

AN outbreak of cerebro-spinal fever has apparently occurred in Belfast. Up to the time when the information reached us there had been 29 cases and 17 of these had proved fatal. Four children in one family were among the victims. Of these one went to bed on Wednesday, Jan. 23rd, apparently perfectly well, but became ill the next morning, death occurring very rapidly. The second child was attacked a little later and also died within an extremely short period. The two other children were similarly affected and died two days afterwards; the short period of illness was remarkable. From the information that we have had at present the cases would seem to be of the "type foudroyante" of French authors; in this country sometimes known as the "malignant type." The bacteriology of the disease has not been absolutely decided but the majority of observers consider that the diplococcus intracellularis meningitidis of Weichselbaum is the pathogenic organism, although this observer himself, reviewing the whole subject in 1903, concluded that it cannot be with certainty asserted that all epidemics are due to the meningococcus, but that some of them may be due to the pneumococcus. The ordinary methods of propagation of the disease are unknown and it has not been traced to food or water-supply. Isolation of affected persons is, of course, essential, but further experience and investigation will be necessary before the exact etiology of cerebro-spinal fever can be stated.

SHAKESPEARE'S "GYNÆCOLOGY."

TO Germany has spread our custom of complimenting Shakespeare on the possession of various kinds of expert knowledge. Under the heading "Shakespeare's Gynäkologie," Herr Franz von Winckel of Munich has recently published in the *Sammlung Klinischer Vorträge* an exhaustive study of the great dramatist's references to woman, especially in her sexual relations. Shakespeare, he avers, was practically a gynæcologist, but the numerous passages quoted to prove this assertion are not at all convincing from the modern scientific point of view. Thus from a passage in Part I. of *Henry the Sixth* Herr von Winckel infers that Shakespeare meant his hearers to believe that the sex of an unborn baby can be foretold from the character of the mother. A variant of this idea is expressed by Macbeth when he bids his lady to bring forth boys only, since she is made of stuff too stern to be the mother of the gentler sex. Falstaff is held to be a forerunner of Schenck and, in a speech in the Second Part of *Henry the Fourth*, is supposed to foretell the influence of a given diet upon the sex of the embryo. A water-drinker will be the father of "wenches" only. To the effects of

tright in the mother upon the health of the unborn Shakespeare makes frequent reference, as also to longings during pregnancy and kindred topics. But all this does not prove the great dramatist to have been in any sense a gynæcological expert, or even particularly learned in the current knowledge in such matters of his day. It proves, if anything, that he knew just as much as his fellow-burghers of Stratford-on-Avon, who were doubtless well versed in such chap-book knowledge as is to be derived from the still popular pseudo-Aristotle's "Master-Piece." Great poets such as Shakespeare do not deal in paradox or specialism; they rather voice popular knowledge, superstitions, and errors in a melodious manner.

THE FOURTEENTH INTERNATIONAL CONGRESS OF HYGIENE AND DEMOGRAPHY.

THE preparations for the Fourteenth International Congress of Hygiene and Demography, which is to be held in Berlin from Sept. 23rd to the 29th, are well advanced. The subjects for discussion in the different sections have been definitely fixed and the openers of the discussion have been selected and invited to undertake the office. Their selection has been made in such a manner that the different questions can be treated from a wide point of view. The greater part of the openers of discussion of German nationality and a great many of those of foreign nationality have already accepted the invitations. All papers and other information referring to the congress can be obtained at the office of the Congress, Berlin, W, 9, Eichhornstrasse. The Secretary-General of the Congress is Dr. Nietner.

CLIFFORD v. TIMMS.

ON Jan. 26th Mr. Justice Warrington gave judgment in the above-mentioned case. The plaintiff and defendant had entered into a partnership as dentists under an agreement that if either partner should be guilty of professional misconduct the other partner should be at liberty to determine the partnership. The plaintiff's name was recently removed from the Dentists Register for infamous conduct in a professional respect and the defendant thereupon gave the plaintiff notice to terminate the partnership. The plaintiff now claimed a declaration that the notice was invalid and an injunction to restrain the defendant from acting upon it. Mr. Justice Warrington granted the plaintiff both declaration and injunction. This judgment being of great importance we shall deal with the matter at greater length in a future issue.

MEDICAL MEN AND SECRET COMMISSIONS.

IN a recent issue of the *Medical Times and Hospital Gazette* there is an article entitled "Doctors and Secret Commissions." In the course of this article we find these words: "An optician jeweller and silversmith stated that recently a man of scientific eminence in Scotland received very large commissions for recommending a certain make of microscope. It is an open secret that hospital doctors receive commissions from makers of surgical instruments." Thus it would appear that on the authority of an optician a statement has been made that hospital doctors receive commissions from surgical instrument makers. We draw attention to this statement because it has appeared in the public press several times within the last few years and we are still without confirmation of it. We have received a letter from one well-known firm of instrument makers, with reference to the article in our contemporary, in which the writer says that he "during an experience of just over 40 years has never met with a single instance of anything of the kind mentioned, and it would appear a curious circumstance that an optician should know more about our trade than one actually engaged in it. I think that this unmerited aspersion on the honour of hospital surgeons should be refuted in your journal, and I think you may rely upon the statement which I offer." Refutation of vague accusations is always a difficult thing to compass and we thank our correspondent for his forcible advocacy of professional rectitude.

THE WINTER EXHIBITION AT BURLINGTON HOUSE

THE thirty-eighth winter exhibition of the Royal Academy of Art was opened to the public at Burlington House on Jan. 7th. The exhibition is of great interest and comprises pictures by early Flemish and Italian Masters, many fine examples of the Dutch School, and various paintings by deceased British artists. To come to two pictures which have a more purely medical interest, No. 64, by Teniers, is a wonderfully painted little picture entitled "The Quack Doctor." He is represented standing on a bench on which are various objects connected with his trade. He is holding up a bottle in his right hand which presumably contains some nostrum. No audience is in the picture but he is evidently haranguing a crowd. Another picture is a very finely painted portrait of Dr. William Pearce of Bath, by Gainsborough. Gainsborough, as is well known, used to go to Bath for his health and lived in the Circus. Pearce was an intimate friend of the artist and also of Miss Burr, the lady who became Mrs. Gainsborough. Contrary to what we believe is the usual custom for professional men in the eighteenth century, Dr. Pearce is habited in light-blue coat with lace ruffles. Among the other pictures which deserve special attention are No. 91, the well-known portrait of Miss Linley, by Gainsborough; No. 93, the magnificent portrait of Mrs. Lee Acton (Mr. Acton's second wife), by Romney; and No. 98, a portrait of Mr. Acton's first wife, also by Romney. An interesting picture is No. 52, entitled "A Picture Gallery," by Haecht. No. 113, "Burning of the Houses of Parliament," is a magnificent specimen of Turner's later manner; and of other pictures by Turner Sir Donald Currie lends the 25 little vignettes in water-colour to illustrate Campbell's poems. In the water-colour room are also shown sundry studies by Lord Leighton. Altogether the exhibition is one of extreme interest.

A MEETING of the Royal Sanitary Institute will be held in Stafford on Feb. 16th. A visit will be made to the Hanley sewage works at 11 A.M. and at 3 P.M. Dr. George Reid, county medical officer of health of Staffordshire, will open a discussion on the question, To What Extent must Authorities Purify Sewage? Those attending and wishing to be present at the lunch must notify the secretary of the institute not later than Feb. 9th.

THE Lettsomian lectures of the Medical Society of London for 1907 will be delivered by Dr. Charles E. Beevor. Lecture I. is to be delivered on Feb. 4th, Lecture II. on Feb. 18th, and Lecture III. on March 4th. The hour of delivery is 9 P.M., and the subject of the lectures is the Diagnosis and Localisation of Cerebral Tumours.

THE King has given to Dr. Oliver Avison His Majesty's Royal licence and authority that he may accept and wear the Insignia of the Fourth Class of the Order of the Tai-Keuk, conferred upon him by His Majesty the Emperor of Korea in recognition of valuable services rendered by him. Dr. Oliver Avison is an M.D. of Toronto.

AT the meeting of the Incorporated Society of Medical Officers of Health on Feb. 8th there will be a discussion upon a paper to be read by Mr. H. O. Pilkington, medical officer

of health of Preston, entitled "The Reduction of Infantile Mortality without Municipal Milk Depôts."

THE annual meeting of the After-care Association will be held at the Apothecaries' Hall, Water-lane, E.C., on Tuesday, Feb. 5th, at 3 P.M. The chair will be taken by Mr. E. Parker Young, the Worshipful Master of the Society of Apothecaries.

THE Department of Public Health of Queensland reports that for the week ending Saturday, Dec. 22nd, 1906, 1 fatal case of bubonic plague occurred. The patient was a male, aged 21 years, who was employed as a hairdresser.

Mr. Henry T. Butlin, D.C.L., consulting surgeon to St. Bartholomew's Hospital, will deliver the Hunterian Oration at the Royal College of Surgeons of England on Thursday, Feb. 14th, at 4 P.M.

THE RÔLE OF THE BLOOD PLASMA IN DISEASE.

BY HARRY CAMPBELL, M.D., B.S. LOND., F.R.C.P. LOND.,
PHYSICIAN TO THE NORTH-WEST LONDON HOSPITAL AND TO THE HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM, WELBECK-STREET.

I.

THE human organism is made up of a vast congeries of cells, and its behaviour from the beginning to the end of life depends upon the inherent properties of these cells, and upon the outside influences which are brought to bear upon them. What are these influences? What, in other words, are the agencies which go to make up the individual cell-environments? They may be considered under two headings—the plasmic and the non-plasmic.

THE PLASMIC ENVIRONMENT OF THE CELLS.

All the cells of the body dwell, as did their remote unicellular ancestors, in a fluid saline medium.[1] This fluid—the tissue plasma or "lymph"—is derived from the blood, and, though it approximates in general character to blood plasma, its composition is peculiar for each kind of tissue, both because the capillaries of the different tissues yield different kinds of lymph and because every species of cell impresses its plasmic environment in a peculiar way.

According to Ludwig, whose views are forcibly supported by Starling, the lymph filters mechanically through the capillary wall, the quantity and quality of the filtrate being regulated by the amount of capillary blood pressure and the degree of capillary permeability. The greater the latter the more does the filtrating lymph approximate in composition to the blood plasma. Thus the highly permeable capillaries of the liver yield a lymph containing 8 per cent. of proteids and differing but little from the blood plasma, while the comparatively impermeable capillaries of the lower extremities exude a watery lymph containing no more than 4 per cent. of proteids.[2] Heidenheim, on the other hand, holds that the capillaries actually secrete the lymph by vital activity. What makes this view seem *a priori* probable is the consideration that the quality of lymph yielded by the capillaries could in this way be regulated with much greater nicety than by mere mechanical filtration; and, seeing that every species of cell has its own special lymph requirements, it surely would be of great advantage if each capillary were endued with the power of secreting from the blood plasma just those ingredients, and those only, which are needed by the neighbouring cells, for in this case the latter would not need to exercise any selection and their work would be correspondingly simplified.

The view that the quality of the exuding lymph is determined solely by mechanical means compels us to assume that the tissues are being constantly furnished with substances that they do not require, a conclusion which greatly complicates the problem of nutrition. Let me give a simple illustration. Certain substances are formed in the body for the purpose of influencing a limited group of cells. Such a one is *secretin*, the function of which is to excite the pancreas, and possibly also the liver, to specific forms of activity. Formed as it is in the duodenum it has, in order to reach these organs, to traverse the portal vessels, the pulmonary circuit, and the aorta, whence *it is dispersed throughout all the systemic capillaries*. Are we to suppose that this substance passes out of all these capillaries indifferently and is supplied in equal quantity to all the cells of the body—nervous, muscular, glandular, and the rest—when it is needed only by a limited number of them? It seems much more in accordance with the fitness of things that the capillaries of the pancreas and liver should exude it more abundantly than other capillaries. Is it possible that the pancreatic and hepatic cells attract secretin by chemiotaxis?[3] Be this as it may, whatever the mechanism, or mechanisms, by which the passage of lymph through the capillary walls is regulated, whether by secretion, filtration, or chemiotaxis, singly or combined, one thing is certain: that mechanism, or those mechanisms, are not ideally perfect. Were the capillaries and surrounding cells endued with perfect discrimination, so that only necessary ingredients were allowed to escape from the blood, it is clear that, except in the case of the excretory glands, no blood poison would ever be permitted to taint the extravascular plasma. This, as we know, is very far from being the case. A little thought, indeed, will show that the capillaries all over the body need to be permeable to poisons; for how otherwise could poisons engendered within the tissues be eliminated?

While, then, we must believe that discriminating agencies are at work regulating—imperfectly though it be—the quality of the lymph which the blood yields to the different tissues, we are probably right in assuming a tendency for all the constituents of the blood plasma, good, bad, and indifferent, to pass through the capillary walls, and in regarding the lymph of the body at large as having much the same composition as the blood plasma. We may, in fact, regard the two plasmas as kindred fluids, having their merits and defects in common, and we must assume that the slightest change in the one is reflected in the other, normal blood plasma thus meaning normal tissue plasma, abnormal blood plasma, abnormal tissue plasma, and *vice versâ*. Whenever I use the unqualified term "plasma" it must be taken to mean either the blood or tissue plasma indifferently.

LOCAL PECULIARITIES IN PLASMA.

Though in general the plasma, and consequently the plasmic environment for individual cells, is much the same throughout the organism, yet local differences in it may exist sufficient to determine the occurrence of disease in some regions more than others. Apart from the fact that each variety of cell affects its environing plasma specifically, and apart from the fact that the bacterial invasion of a tissue causes a concentration of bacterial poisons in that tissue, local differences of plasmic constitution may occur as the result of local differences of circulation. It seems likely that a careful study of this subject would throw considerable light on the distribution of disease within the organism. Thus the blood-supply is more abundant in some tissues than others, and this tends to produce local variations in the character of the tissue plasma and in this way to determine the site of disease in particular areas. Those muscles, for example, which are most important to life, such as the heart and diaphragm, have a more abundant supply than other less important ones, and Ehrlich has shown that the distribution of vital staining is related to the degree of local blood-supply; thus in certain experiments with mice he found that the parts surrounding the central tendon of the diaphragm were more intensely stained than the peripheral portions, and he suggests that the distribution of paralysis in lead and arsenic poisoning may be explained on these lines.[4] Similarly parts in which

[1] It is true that such cells as the superficial cells of the epidermis are not entirely surrounded by fluid, but these may be regarded as practically dead. All other surface cells, such as those of the serous and mucous membranes and of the cornea, have their free surfaces constantly bathed in fluid. Indeed, it may be said that no animal cell can maintain its vitality for any length of time unless entirely environed by fluid.

[2] "The cells of the capillary wall do not secrete tissue fluid. There is no evidence that they play any but a passive part in the formation and absorption of tissue fluid." (A. P. Beddard, Some Recent Discoveries in Physiology, edited by Leonard Hill, p. 617.) He holds that the tissue plasma is poured out from the capillaries in obedience to osmosis, diffusion, and filtration.

[3] In this connexion I may refer to the following quotation from A. P. Beddard. It seems likely that the living cells "institute the passage of nutriment from the blood to the tissue fluid, just as much as from the tissue fluid to themselves."—Op. cit., p. 616.

[4] Studies in Immunity, pp. 421 et seq.

the plasma is apt to stagnate are prone to disease. Sir William Gowers has argued that the arrangement of the veins opening into the superior longitudinal sinus is such as to predispose to venous stasis and consequent softening in this region from interruption of the intercellular plasmic flow; while Marie and Guillain have attributed the involvement of the posterior column of the cord in tabes to certain local peculiarities of the lymph circulation.[3] Again, Sir Lauder Brunton suggests, and the suggestion is well worth consideration, that the absence, in subjects of high arterial tension, of the normal free expansion and contraction of the arteries may, by interfering with the due flow of lymph within their walls, predispose them to degeneration; and certainly the absence of rhythmic contractions in a muscle, and the consequent stagnation of plasma in its substance lead to its ultimate disorganisation.

There is possibly a further way by which local peculiarities in plasmic composition may be induced. Is it possible that when a parenchymatous cell (muscle, gland, or nerve cell) attracts a poison from the plasma, the damaged cell by the faulty metabolism thus ensuing affects its circumnatant plasma injuriously, in such wise, e.g., as to irritate the local connective tissue? Can we in this way explain the otherwise puzzling fact that in genuine parenchymatous degenerations of toxic origin, the connective tissue in the neighbourhood of the affected parenchyma shows signs of irritation, while in other regions that tissue wholly escapes injury? Thus, in tabes dorsalis the pia mater over the posterior columns is thickened, and in granular kidney there is considerable induration of the renal capsules. When the poison causing the parenchymatous degeneration circulates freely all over the body, how comes it that, instead of causing a generalised fibrosis, it manifests a special tendency to set up fibrosis in the neighbourhood of those parenchymatous cells which specially attract it?

THE NON-PLASMIC ENVIRONMENT OF THE CELLS.

In the case of some cells, such as the blood corpuscles and connective tissue cells, the plasma constitutes the entire environment, but besides these plasmic influences most of the fixed cells of the body come under the direct influence of the nervous system; the human organism may, in fact, be regarded as consisting essentially of a nervous system having attached to the extremities of its efferent nerves—like so many leaves to the twigs of a tree—myriads of muscle and gland cells, all of which, in common with those of the nervous system itself, are held together by a connective-tissue framework, the whole being permeated by a complex vascular system containing blood and lymph. Thus it happens that nervous impulses are constantly flowing into the muscle and gland cells and influencing their activities; indeed, the very vitality of these cells—certainly of those of the voluntary muscular system, which constitutes no less than one half of the entire body weight—is dependent upon this constant inflow of nervous impulses, for when their motor nerve connexions are severed they disintegrate and die.' And not only are muscle and gland cells directly influenced in this way by the nervous system, but contiguous nerve cells influence one another through their dendrites and axites, and in this way nerve impulses are enabled ceaselessly to reverberate throughout the entire nervous system.

In the case of the peripheral sensory neurons the non-plasmic environment embraces also those external agencies which operate upon the terminal expanses distributed to the organs of special sense, the integument, and the digestive tract. Such are the atmospheric and ether vibrations by which are produced the sensations of sound, heat, and light; such also are the grosser contacts which give rise to the sensations of touch, pain, and repletion. It is essentially these agencies which maintain the nervous system in that state of vibration by which it is agitated from the beginning to the end of life, and it is essentially through them, too, that a knowledge of the external world is gained and that the mental personality is gradually built up.

THE SOURCE OF THE BLOOD PLASMA.

The bulk of the blood plasma is made up of nutrient materials dissolved in water. These are derived from the food, and consist of the final products of digestion as poured by the hepatic veins and the thoracic duct into the general circulation. The ingested food first comes under the influence of the digestive juices, whereby the proteids, saccharides, and fats are disintegrated; it then suffers a further change in its passage through the gastro-intestinal epithelium; thereafter the whole of it, with the exception of a certain proportion of the fat (which travels by way of the lacteals), comes under the influence of the liver which, putting the final touch upon the process of digestion, delivers into the general blood-stream fluid nutriment of a kind suitable for the nutrition of the tissues, be they the lowly elements of connective tissue or the more highly endowed cells of muscle, gland, or nerve.

We know very little concerning the changes which the liver effects in the plasma of the portal blood, but common sense, often more convincing than physiological experiment, points unmistakeably to the conclusion that in the laboratory of this great gland the portal plasma undergoes its final preparation for entrance into the general blood-stream. Why, otherwise, should almost all the absorbed food be driven through this, the largest gland in the body, containing as it does much more glandular tissue than the entire digestive canal? Why, I say, should this occur, unless it be for the purpose indicated?

We may, I think, be sure that this digestive function is much the largest function, so to say, of the liver, for the glycogenic function, concerning which there is still great difference of opinion, may be regarded as only a part of the process of digestion (using this term in a comprehensive sense). The urea function, important though it be, might be carried on by a much smaller organ, seeing that its total daily output is less than a solitary ounce, and the biliary function again, by an organ no larger than the salivary glands, which yield as much saliva as the liver yields bile. In brief, we may safely conclude that at least three-fourths of the work done by the liver consists in preparing the portal plasma for entrance into the general blood-stream, a function which may be spoken of as "hepatic digestion," as distinguished from the "primary digestion," which takes place in the alimentary canal.

I have said that the bulk of the blood plasma consists of an aqueous solution of nutrient materials. But it may be asked, Why should it not contain as much waste as nutrient matter, seeing that in an individual whose weight remains stationary the daily quantities of each passing into the blood must be equal? In the case of the lymph environing the individual cells of the tissues it is probable that the two are on an average equal; but there can be little doubt that in health the blood contains a considerable excess of nutrient over waste material, and this must be because of the speedy elimination of the latter. How rapidly waste products are normally eliminated from the blood is shown by the rapid subsidence of dyspnœa in the well-trained athlete after, say, rowing the Henley mile.

But though the bulk of the solids of the blood plasma consists of nutrient materials elaborated by the digestive organs it would be a great mistake to think of the plasma as formed by any special organs or tissues, for in point of fact it is the product of the united activities of the tissues in general. Not a cell of the body but leaves its impress on this remarkable fluid, and that not merely in the sense of adding useless waste matter to it, but in the sense of providing it with constituents essential to the normal functioning of the tissues. Among the numerous substances thus produced are hormones, ferments, and antibodies.

The hormones are known to be produced by many different tissues, including the thyroid, thymus, adrenal, gastric, duodenal, pancreatic, ovarian, and testicular glands; and I shall presently argue that hormones are produced by all the tissues; certainly carbonic acid, a potent excitant of the respiratory centre, is. It is also probable that the plasmic ferments, which assuredly subserve some useful function, are produced outside the vascular system.

The fact that the blood plasma is elaborated by the tissues in general, and not by any special organs or tissues, is further shown by the phenomenon of antibody formation. We speak of the blood as forming these antibodies—antitoxins, antiferments, opsonins, bacteriolysins, precipitins, coagulins, and the rest—as though their elaboration were the function of the plasma itself; but the fact is that the power, the well-nigh limitless power, of producing antibodies belongs, not to the lifeless plasma, but to the living cells; and when we speak of the "memory of the blood" in connexion with acquired immunity we mean, or should mean, not the memory of the lifeless plasma—a thing of the moment, undergoing ceaseless change—but of the tissues from which the antibodies are derived. What

[3] See Dr. Ferrier's First Lumleian Lecture on Tabes Dorsalis, 1906.

these tissues are we do not certainly know, but it is probable that they include all the tissues of the body.

Inasmuch as the blood plasma is produced by all the cells in the body it follows that each single cell contributes to the plasmic environment of every other cell, and seeing that the activity of a cell is largely controlled by its plasmic environment *it follows that all the remaining cells of the organism play some part in determining the activities of any particular cell.* Observe that throughout life there take place a ceaseless action and reaction between the cells and the plasma, for, on the one hand, the activities of the cells determine the composition of the plasma, and, on the other hand, the composition of the plasma determines the activities of the cells.

THE COMPLEX CHEMICAL COMPOSITION OF THE BLOOD PLASMA.

These considerations regarding the source of the blood plasma show how subtly complex its chemical composition is. Indeed, as regards complexity of composition no fluid in nature can compare with plasma—be it that of the blood or the tissues. In thinking of the plasmic environment of individual cells let us ever bear this fact in mind. *Every active cell in the body is environed by a plasma containing a multitude of different chemical substances*, many of them of a highly complex constitution. These plasmic constituents may be grouped as follows: food-stuffs and free oxygen, ferments, hormones, anti-bodies, and excreta; and we shall best appreciate the highly complex nature of the plasma by inquiring—briefly though it must be—into the chemical composition of these various constituents. Such an inquiry brings into striking relief the meagreness of our knowledge regarding them. Most of them, indeed, defy the most delicate tests of the chemist.

Food-stuffs.—Even in regard to the nutritive constituents of the plasma—proteids, fats, saccharides, and salts—we have still much to learn. We have, it is true, a fairly accurate knowledge of the salts of the plasma, and we can estimate the percentage of serum albumin and serum globulin in this fluid, but our knowledge of the plasmic proteids is very incomplete. Our chemical knowledge of the plasmic fats and saccharides is equally limited; our ignorance of the former is shown by such a consideration as the following: when by means of exercise the weight of the body is reduced the stored fat is dissolved and carried to the muscles, there to be burnt off, and yet we are entirely ignorant as to the form in which it is conveyed.

Ferments.—Concerning the chemical composition of the ferments of the blood we know next to nothing; we are only able to judge of their presence by their power to induce fermentation.

Hormones.—The like is true of the numerous hormones which exist in the blood: we are all but entirely ignorant of their chemical composition. We know the composition of carbonic acid and of adrenalin, which can be now actually synthesised in the laboratory, but the analysis of the remaining hormones still baffles the chemist. To each of them we may apply Professor E. H. Starling's remarks concerning secretin: "We have no clue as to its chemical character." What chemist can detect the differences in respect of hormones between the blood of patients suffering respectively from exophthalmic goitre, myxœdema, and Addison's disease, even though the hormonic defects in each of these affections may be such as profoundly to affect the metabolism of every cell in the body, to alter the individual in his entire being, and ultimately to compass his death? Where, again, is the chemist who can discover the hormonic differences, now known to exist, in the plasma of the menstruating and the non-menstruating, or the pregnant and the non-pregnant, woman?

We shall do well to reflect on this subject. The plasma contains numbers of these subtle essences, numbers of these mysterious messengers the function of which it is to incite the tissues to special forms of activity,[6] and we are beginning to see how extensive is the rôle they play in health and disease. I venture to think that we shall have greatly to widen our conception of these remarkable substances, and that it will ultimately be found, as I suggested some years ago,[7] that many of the products of cell activity, which we are wont to regard as merely useless or even harmful waste, serve a useful purpose. One of these purposes may be to stimulate the nervous system. It has long been known that the blood may from time to time contain waste products which depress nervous activity, but the possibility of certain waste products having normally an opposite stimulant effect has been lost sight of. That a waste product may act as a hormone is shown by the action of carbonic acid on the respiratory centre, which, as Starling suggests, may have evolved a special sensibility to this substance. This physiologist, indeed, hints that all the hormones may have been in the first instance waste products pure and simple. "We may, perhaps, assume that the more specialised messengers ..... were at first accidental by-products of the selfish activity of the organ producing them, the first step in the development of a correlation being the acquisition of a sensibility to the substance in question by some distant organ."[8] It must not be forgotten that the waste products which are eliminated by the excretory glands have a hormonic action on those glands. In this sense such a substance as urea is hormonic as regards the kidneys, and by stimulating the renal epithelium to excretion may exercise a beneficial influence on it. Nay, we may go even further than this: the question may, I think, legitimately be raised whether the presence in the plasma in non-toxic proportions of cell excreta may not be beneficial to their vital activities. May it not be argued that cells which for myriads of generations have been bathed in plasma containing a large number of excretory substances, may have become so completely adapted to them that the complete absence of those substances from the plasma would be detrimental to cell activity? This view is rendered all the more probable from the fact that the tissues can to some extent adapt themselves to a decidedly toxic environment, so much so that a sudden removal of the toxic factor tends to a temporary lowering of function, as happens, for example, when the habitual opium-eater suddenly leaves off taking the drug.

The antibodies.—Though we generally attribute the presence of antibodies in the plasma to morbid conditions it is probable that they are also formed physiologically. In any case they are present in healthy blood, for after recovery from an infectious disease they persist, it may be for a long time, in the plasma. Concerning the chemical nature of these antibodies we know little or nothing.

Excreta.—Some may be inclined to think that, if our knowledge of the other constituents of the plasma is meagre, at least it is fairly complete concerning the excreta. Yet this is not the case. Two or three of these substances, such as carbonic acid, urea, and uric acid, have been satisfactorily analysed; but these are but a few among many. Numerous substances, concerning which we have no chemical knowledge whatever, are being continually eliminated by the lungs, skin, kidneys, and bowels.

Summary.—We must once for all rid ourselves of the notion that plasma consists simply of a few nutrient ingredients and useless excreta dissolved in water. We must, instead, think of it as an aqueous solution of an almost endless variety of substances, many of them possessing a highly complex composition and most of them defying the most careful and delicate methods of chemical research. And let us ever strive to keep clearly before us the fact that it is in a fluid of this kind that, from the beginning to the end of its career, every cell in the body lies bathed, and through it is subjected to an infinite variety of influences.

VARIABILITY OF NORMAL PLASMA.

The foregoing considerations by no means exhaust the subject of plasmic complexity. The composition of plasma differs normally in different races, in different individuals of the same race, and even in the same individual at different times. Each race—Caucasian, Mongol, and Negro—as well as every subsection of these races, every family—nay, every individual—has certain plasmic characteristics. No two humans, in fact, have exactly the same kind of plasma. Nor is this surprising, considering the exceedingly complex constitution of this fluid. These subtle individual differences do not, it is needless to say, admit of chemical demonstration. They can, however, be proved in a very simple way. There escape from the lungs, skin, and kidneys of every individual, numerous odoriferous substances, which, coming as they do from the blood plasma, enable individual differences in plasmic composition to be detected during life by the sense of smell. We ourselves can detect some of the

[6] The convenient term "hormone" (from ὁρμάω, I excite or arouse) has been suggested by Professor Starling, whose remarkable work with Bayliss on the subject of secretin has opened a new chapter in physiology.

[7] The Cravings for Stimulants, THE LANCET, Oct. 21st, 1899, p. 1091.

[8] The Croonian Lectures, 1905.

more decided of these differences, as those between the negro and the white man, and sometimes even between individuals of the same race; but certain animals, like the dog, have no difficulty in recognising the individual smell of anyone after quite a short acquaintance. A man's physical personality shows, indeed, as characteristically in his emanations and excretions as in his features and the conformation of his body.

And not only has every individual a plasmic constitution peculiar to himself, but one also which, as I have said, varies physiologically from time to time. Thus the plasma changes with every epoch of life, steadily altering through infancy, childhood, adolescence, maturity, and old age; and these changes determine, as we shall see, the functional and structural peculiarities of these successive epochs. Among other circumstances the composition of the plasma also varies with the season of the year, the time of day, with locality, climate, the nature and amount of food and drink consumed, and the amount of exercise taken. It is also considerably influenced by menstruation, pregnancy, and lactation. Just as individual plasmic differences can be detected by the sense of smell, so also can the differences met with in the one individual at different times, for these are all accompanied by characteristic emanations. We ourselves can sometimes detect these differences, though not generally until the limits of health have been passed.

VARIABILITY IN NORMAL METABOLISM.

Seeing that no two plasmas are the same in any two individuals, and that the metabolism of the cell must vary with the nature of its plasmic environment, it follows that no two individuals metabolise in exactly the same way. Seeing again that the plasma of any one individual varies considerably even in perfect health, it follows that his metabolism is normally subject to variation. In other words, the normal metabolism of man varies a billion-fold—a fact ever to be kept in mind. While recognising a fundamental plasmic and metabolic likeness between all, let us not forget these differences between individuals, and in the same individual at different times. Some of these metabolic differences are sufficiently obtrusive to be easily recognisable. Thus, some incline to fatness, others to leanness; some perspire readily, others with great difficulty; some are energetic, others lymphatic, and so on.

IMPORTANCE OF THE GLAND CELLS IN DETERMINING PLASMIC COMPOSITION AND METABOLISM.

The gland cells take precedence of all others in the elaboration of the plasma and in maintaining it in the normal condition, and consequently it is they more than any other cells which determine the character of the general metabolism—which strike, as it were, the metabolic note of the individual. It is they which elaborate the nutrient constituents of the plasma; it is they which furnish this fluid with all the recognised hormones (with the single exception of carbon dioxide); and they it is which purge the plasma of useless or harmful material. It may be, as I have suggested, that other cell types—e.g., muscle and nerve cells—yield the plasma substances which play a useful part in the economy; but even so they must be far inferior to the gland cells in their influence on the composition of this fluid. We must, therefore, assume that individual differences in the composition of the plasma, and in metabolism, depend chiefly upon differences in the vital activities of the glandular tissues. We cannot doubt that different individuals differ considerably in this latter respect, that marked individual differences obtain in the capacity of the gland cells to form such substances as pepsinogen and adrenalin, and that in some the gland cells elaborate substances different in character from those yielded by the corresponding gland cells in others. Doubtless similar differences obtain in regard to the biochemical activities of muscle and nerve cells, but one can hardly doubt that such differences are much less marked than in the case of the gland cells. One would expect the nature of the metabolism of nerve and muscle to be much the same in every one. While, however, the gland cells take precedence of all other cells in their influence on the composition of the plasma, and thus on the nature of metabolism, it must not be forgotten that the nervous system profoundly influences both the one and the other, not only through its direct connexion with the muscle and gland cells but indirectly through its control of the plasmic circulation.

MORBID PLASMA.

It is scarcely necessary to say that there is no sharp line between normal and abnormal plasma; the one shades off imperceptibly into the other. There is, indeed, no such thing as an ideally normal plasma, for not only does the plasma vary, as we have just seen, for each individual, but for any given individual there are many grades of perfection—i.e., conditions of plasma consistent with what would generally be regarded as health.

It is not possible to deal adequately here with this enormous subject, concerning which our whole knowledge is but the veriest fraction—the merest fringe—of what is to be known. It must suffice to indicate some of the ways in which the plasma may be defective. The plasma may be faulty in respect of any of its normal constituents. It may, for example, contain too little or too much albumin, sugar, or fat, or these may exist in abnormal forms. Francis Hare contends with much force that an accumulation of carbonaceous material in the blood, a condition he terms hyperpyræmia, is productive of many morbid results.[9] Or, again, there may be an excess, or deficiency, or perversion of the hormones or ferments normally present in the blood. Or, once more, there may be an accumulation of normal waste products. A second class of plasmic defects results from faulty metabolism, in consequence of which the plasma is poisoned by substances which do not properly belong to it. There are doubtless many such, though we as yet know very little about them. Such are choline (found in the cerebro-spinal fluid of general paralytics) and its derivative neurine, also certain poisons met with in uræmia and diabetic coma.

The toxæmia of indigestion, or "indigestion toxæmia," as we may conveniently term it, though it may often be largely due to bacterial poisons, results in the main from the absorption of the products of digestion—from what may be termed "digestive metabolism"—the substances thus formed being strictly autogenetic, which is not the case with bacterial poisons. Even in normal digestion albumoses, peptones, and other poisonous substances are abundantly formed, but these are either neutralised or are prevented from entering the blood stream as such by the gastro-intestinal epithelium and the liver. In indigestion such poisons may be formed in excess, and may successfully rush the two lines of defence and so contaminate the systemic plasma; and it is possible that weakness in these defences—e.g., from enteritis or hepatic disturbance—may have the same effect.

When we consider the infinite complexity of the digestive process in stomach, liver, and bowel, it is obvious that the opportunities for defective digestion are immense. And be it observed that there are innumerable different kinds of digestion—that no two individuals digest in the same way, that each individual digests differently at different times, that perfect digestion is an ideal seldom, if ever, attained; and that within the strict limits of what would by most be regarded as normal digestion there are innumerable grades of perfection, just as beyond those limits there are grades innumerable of imperfection. In an ideally perfect digestion the digestive products are delivered by the hepatic veins and the thoracic duct into the systemic blood stream, in the form most conducive to the normal metabolism of the tissues, and a little thought will convince the reader that there are myriads of ways in which this digestive output may show defect.

Last, but not least, the plasma may be contaminated by extraneous poisons—i.e., poisons either introduced as such from without (e.g., alcohol, nicotine, lead, tainted food) or formed within the body by bacterial agency. These bacterial poisons, which play so large and disastrous a part in disease, are yielded either by the bacteria themselves, or generated by a process of digestion which the bacteria set up in the plasmic proteids, in consequence of which albumoses, peptones, and kindred substances are produced.

Having regard then to the many individual respects in which the plasma may be faulty, and to the many different ways in which these various defects may be combined, it is no exaggeration to say that the varieties of defective plasma are, not many, but infinite.

Every disease, at least every general disease, is as it were mirrored in the plasma, though as yet we but rarely catch the reflection; but who can doubt that an all-wise physician might with very truth exclaim, "Show me the patient's plasma and I will tell you his disease." And yet how little we know of the pathology of this subtly complex fluid—the arcanum of many pathological secrets, the repository of so many therapeutic indications. I have before me several

[9] Francis Hare, M.D.: The Food Factor in Disease.

treatises, some of cumbrous dimensions, on the diseases of the blood. They deal exhaustively with the diseases of the corpuscles, and display numerous artistically tinted drawings of corpuscular abnormalities, but concerning the disorders of that wonderful fluid which hides the secret of so many diseases, and which is so rich in the indications it affords to treatment, could we but decipher them, they are all but completely silent.

VARIABILITY IN MORBID METABOLISM.

Seeing how endless are the varieties of morbid plasma it follows that the varieties of morbid metabolism must be equally numerous. This consideration enables us to see how impossible it is that any two cases of general disease should be exactly the same, and why many of them wholly elude classification. Let me give a few concrete instances in illustration of my meaning. It is certain that all the diseases of the kidney, including granular kidney, grouped under the name of Bright's disease, are induced through the plasma; in each a morbid blood state sets up morbid changes in the kidneys. Now considering the innumerable ways in which the blood may be at fault, we may be quite sure that there are many different morbid blood states capable of setting up diffuse inflammatory and degenerative changes in the kidneys, and that each of them will affect the kidneys in a different way (no matter how small that difference may be) from any of the others; from which it follows that there must be numerous different varieties of Bright's disease, many of which it is impossible at present satisfactorily to classify. Some of them—e.g., scarlatinal nephritis, small red granular kidney, and the small pale kidney of Rose Bradford—admit of classification, but there are others having neither a characteristic morbid anatomy nor symptomatology, or at least not sufficiently characteristic for us to identify them. The only satisfactory way of classifying them would be by reference to the blood states causing them, and our chemical knowledge does not at present permit of this. Such considerations as these should abate a feverish desire to pigeon-hole every case of nephritis that comes before us.

Take, again, those many different forms of polyarticular affection which are somewhat loosely grouped together under the name of rheumatoid arthritis. Even those who have had the largest experience of these affections find a difficulty in classifying them satisfactorily. Admitting the justifiability of A. Garrod's broad classification into (1) arthritis deformans, in which there are enlargement of the ends of the bones, degeneration of the cartilages, and eburnation of the exposed bony surfaces; and (2) rheumatoid arthritis, in which, together with general constitutional debility, the joint change is largely confined to the capsule, while the fingers tend to be fusiform—admitting, I say, this classification to be a good practical one, we yet see many rheumatoid affections which we find it difficult to place unreservedly in one or other of these divisions. Nor is it difficult to see why this should be so, in the second or fusiform variety at all events. No one who has seen many cases of this affection can doubt that it is a blood disease, and that the joint trouble is secondary to the blood state; nor can it be doubted, from the closely similar clinical picture which so many of these cases present, that a specific condition of plasma underlies them all, but, like everything pertaining to the blood, this specific factor tends to vary in different cases, and for this reason, as well as because the joints of different individuals tend to react differently to the same plasmic stimulus, the arthritic change tends to vary considerably in different cases. Assuming that typical cases of the fusiform variety are due to a specific plasmic state, say a bacterial poison, that poison may vary greatly in intensity, and it may combine with countless other plasmic factors, as well as individual arthritic peculiarities, to produce the arthritic effects observed. But if such is true of this, one of the most definite forms of rheumatoid arthritis, how much more must it be true of the less definite forms? Is there any wonder that there should be a difficulty in classifying the arthritic disorders which occur secondarily to blood states? As in the case of the nephrites, the only satisfactory classification of these disorders would be one founded on the condition of the blood responsible for them; but this is not yet practicable.

What is true of these two groups of plasmically induced disorders—the nephrites and the rheumatoid arthrites—applies to all diseases having a plasmic origin. Once we realise how multitudinous are the varieties of morbid plasma, and the endless number of clinical-complexes to which they give rise, the difficulty of classifying these latter becomes apparent. Even when there is a definitely specific plasmic defect, as in Graves's disease, Addison's disease, and myxœdema, we may not be able to make a diagnosis. All three are due to some hormonic defect; but how are we to decide upon the amount of defect that is to constitute actual disease—the exact amount of deficiency in the thyroidal hormone, for example, which shall justify us in saying that a person has myxœdema?

By bearing such facts as these in mind we shall be able to give a philosophical interpretation of many cases of disease which would otherwise puzzle us. We shall be constantly recognising borderland cases of Graves's disease and myxœdema, and sometimes even of Addison's disease. We shall also be prepared to meet with many varieties of plasmically induced diseases—all too many, alas—which we cannot hope to identify; but, even so, it is something to be able to recognise such as essentially plasmic in origin, and to realise that their proper treatment is one directed to setting the plasma right.

(To be continued.)

GERMAN METHODS OF MEAT INSPECTION, AS CARRIED OUT IN BERLIN.

BY HUGH A. MACEWEN, M.B., CH.B. GLASG., D.P.H. LOND. AND CAMB.

THE subject of meat inspection is at present exciting considerable attention all over the country, and medical men are so intimately associated with this important question that perhaps it may be of interest to the readers of THE LANCET to have a brief account of the method as I saw it carried out in Berlin. The inspection of meat in that city naturally divides itself into three parts: (1) that of the live animals in the cattle-market carried out by veterinarians appointed by the State Governmental police department; (2) that of slaughtered animals in the slaughter-house, undertaken by veterinarians appointed by the Berlin municipal authorities; and (3) supervision of meat in the public market and in private butchers' shops by State Governmental police officials.

A. *The cattle-market.*—The cattle-market immediately adjoins the abattoir, so that the animals which are conveyed thither from all parts of the country by train may not have far to walk on their removal to the place of slaughter. All animals are examined—first, on arrival at the platform (this is necessarily a somewhat hasty inspection); and, secondly, a more thorough examination is made as the cattle stand in the very large and well-lighted sheds in which they are lodged prior to their removal to the slaughter-house. Should disease be found in any animal it is at once seized by the police, slaughtered, and disposed of by them. Further, should disease of a very infectious nature be discovered, which, if not attended to, might rapidly infect the healthy animals, then the whole consignment of cattle brought together in the cattle-market is slaughtered then and there on the premises, not a single animal being permitted to be removed to the slaughter-house or elsewhere. The carcasses which prove healthy after a most careful examination are sold and the others are destroyed; then before the arrival of fresh cattle on the scene the whole place undergoes a process of disinfection.

B. *The slaughter-house.*—All animals, excepting horses, intended for the food of man, must be slaughtered in the large central abattoir provided by the city for that purpose. When an animal leaves the cattle-market and passes into the slaughter-house it comes under the control of the Berlin municipal authorities, whose officials are responsible for its further care till it passes out of the abattoir dressed and ready for the butcher's shop.

German law divides all meat into four great classes, each of which has a characteristic stamp by means of which it may be recognised: (1) "taugliches" flesh, that which is quite healthy and which may be exposed in the butcher's shop; (2) "minderwertiges" flesh, which comes from animals which are not diseased but are for some reason in poor condition, and therefore cannot be sold as full-valued material; (3) "bedingt taugliches" flesh, that which on account of the presence of disease in a slight degree must

be thoroughly boiled before being eaten; and (4) "untaugliches" flesh, that which must not be used for human food. The butcher is permitted to remove meat stamped as "tauglich," or quite healthy, to his shop and sell it freely to the public; all flesh bearing any other stamp must remain in the slaughter-house, the Berlin municipal officials being responsible for its further treatment and disposal. "Bedingt taugliches," or slightly diseased meat, is sterilised on the premises in large boilers and sold along with "minderwertiges," or poor meat, the former in its cooked and the latter in the raw condition, in an institution known as a "Freibank," which is attached to the slaughter-house. Such flesh is bought by the poorer classes, who come to the abattoir in order to obtain it.

Inspection.—All inspectors must be duly qualified veterinarians, having been specially trained in meat inspection and having passed an examination on that subject as a test of their proficiency. They are divided into two classes, junior and senior, the former being much more numerous than the latter. It is the duty of the junior to go over and carefully to inspect every animal, in order to discover the presence or absence of disease. If the animals prove healthy then their carcasses and organs are stamped as "tauglich" or wholesome, and they may be removed by the butcher to whom they belong without further let or hindrance. Should disease of such a nature or degree be present as to prevent the junior from stamping them as "tauglich" then he pastes a label on their carcasses, bearing the words "preliminarily rejected and condemned, Dr. ——, municipal veterinarian." The senior inspectors do not take part in the routine examination of every animal but confine their attention to those that are preliminarily rejected and condemned in order to determine whether they are diseased, and, if so, to what extent.

Mode of inspection followed by the junior inspector.—Slaughter has generally been in progress for some time before the junior comes on the scene. The slaughtered animals hang, cleaned and dressed, and cut into two through the vertebral column. The lungs, the heart, and the liver remain hanging to the carcass to which they belong by the trachea, which has not been entirely detached from the neck, so that the inspector may satisfy himself that they really belong to the animal in question. The heads, with the tongues attached, hang on hooks on the wall and all the organs belonging to each animal must be retained lest they should require to undergo examination or to be destroyed should the animal be condemned. A careful inspection of the following organs and parts is made. 1. The head. A general survey of the outer aspect (actinomycomata), lips, gums, and mouth (foot and mouth disease). The tongue is palpated (foot and mouth disease and actinomycosis; the latter is frequently found, generally in the form of a localised focus, which is merely cut out by the inspector, the rest of the organ being allowed to go free). The external and internal masticatory muscles are incised in such a manner as to expose their lymphatic glands which lie in that neighbourhood (cysticerci). The submaxillary, retro-pharyngeal, upper cervical and laryngeal glands are incised (tuberculosis, actinomycosis). 2. "Sling" (consisting of lungs, liver, and heart, all attached together, as removed from the animal). The lungs are carefully palpated and incised in a transverse direction (tubercle, inflammations, aspirations of blood, or stomach contents). The mediastinal and bronchial glands are incised (tubercle). The liver is inspected, palpated, and incised, along with the portal glands (degenerations, inflammations, tumours, tuberculosis, liver-flukes). The heart is incised in such a manner as to open into both chambers (endocarditis, degenerations, cysticerci, &c.). 3. The spleen is palpated and the splenic lymphatic glands are incised (tuberculosis, echinococci, &c.). 4. The mesentery. The glands are incised (tuberculosis). 5. The carcass. General aspect (hæmorrhages, œdema, emaciation). Peritoneum and pleura (the diaphragm should be lifted lest it hang down and conceal something) (inflammations, tumours, tuberculosis). In the case of pleurisy in otherwise healthy animals the pleuræ are carefully removed before the carcasses are stamped as "tauglich." 6. The sternum, the vertebral column, and the os pubis (tuberculosis, osteomyelitis). This concludes the examination made by the junior.

Mode of inspection followed by the senior inspector.—As already stated, the senior confines his attention to those animals preliminarily condemned by his junior colleague. These he subjects to a more thorough examination in order to make up his mind if disease be present to any great extent, and if so whether the meat is to be entirely condemned and stamped as "untauglich" or unusable, or whether it may be possible for him to let it pass as "bedingt tauglich," in which case it is sterilised, or "minderwertig" (of poor quality), the two latter qualities being sold in the "Freibank." As tubercle is the disease from which animals are most frequently condemned a description of the mode of investigating such a case and the conclusions drawn therefrom may be given as an example. Two men who accompany the senior on his rounds attack the suspected carcass and mounting on ladders remove the following lymphatic glands, the one from the right, and the other from the left, half of the animal with the greatest dexterity, the process not occupying more than three minutes. 1. From the hind quarters.—External surface: (1) popliteal glands; and (2) kneefold glands. Internal surface: (1) superficial inguinal glands; (2) deep inguinal glands; and (3) internal iliac glands. 2. From the middle quarter.—Internal surface: (1) lumbar glands; and (2) renal glands. 3. From the fore-quarter.—External surface: prescapular glands. Internal surface: (1) lymphatic glands of inferior thoracic wall; (2) lymphatic glands of superior thoracic wall; and (3) upper, middle, and lower cervical glands. These glands are handed to the inspector, who, knife in hand, stands at a table and sections and examines them as they are brought. In the early stages of tubercle the glands become enlarged, and there is an increase in their fluid content; minute grey tubercles next make their appearance. Later the tubercles enlarge and become round in shape, while their centres show a cloudy appearance due to caseation, and finally a calcification takes the place of the caseation. Some of these calcified glands become greatly enlarged in size and so hard that they cannot be cut with a knife. It is very important that the inspector should be able to recognise the early stages of the disease, as, of course, glands which are beginning to enlarge and to exhibit minute tubercles are more dangerous than those in which calcification has already occurred. It is important to determine whether the disease is of a local or generalised character. Where extension has taken place through the lymphatics and not by means of the general circulation the tubercle is said to be local, whereas when the blood has conveyed the virus we speak of the condition as generalised. Generalised tubercle is of two forms: (1) acute, where the blood has become extensively infected by the bacilli and where in consequence we find many tubercles in nearly every organ; and (2) where there has been a slight infection of the blood with the formation of isolated tubercles in certain organs. It is interesting to note that it is the bases, and not the apices, of the lungs that first become affected with tubercle in bovine animals.

Professor Ostertag in the *Berlin Archives* says that the organs of cattle suffering from generalised tuberculosis are attacked in the following sequence. A uniform infection of the lungs and the liver, followed by an infection of the spleen and the kidneys, then the prescapular and the inguinal glands, the udder, the bones, and the joints. He also states that where the kneefold, the inguinal, the popliteal, the prescapular, and the axillary glands are tuberculous the bones of the extremities, the joints, and the skeletal muscles are also affected. Now it is taught that tubercle bacilli gain entrance into the muscular structures only when they are conveyed thither by the blood stream. Therefore the meat from animals suffering from generalised tuberculosis is injurious to health and must be condemned.

Much of the senior's inspection is merely confirmatory of that already undertaken by the junior. He should, however, prosecute his examination of organs and parts in a definite order: (1) meat, vertebral column, ribs, sternum, and pleura; (2) lymphatic glands (removed from carcass); (3) udder in female animals (palpation); (4) kidneys; (5) spleen (palpation, parallel longitudinal sections cut); (6) liver and portal lymphatic glands; (7) lungs and adjoining glands; and (8) other internal organs. By proceeding thus, from the parts least likely to be affected to those that are generally diseased, he avoids, perhaps, soiling healthy flesh by a knife already used to cut tuberculous material. Such an examination generally enables the inspector to decide without difficulty whether the disease is local or generalised.

Sanitary judgment.—If tubercle is present, even in isolated foci in any organ, the whole organ is to be condemned as dangerous to health. Likewise, all appendages and lymphatic

glands belonging to such an organ must be removed and destroyed. If the pleura or peritoneum be affected in a localised manner they must be dissected off with the greatest care and removed along with their lymphatic glands.

Unfortunately, a detailed description of the mode of dealing with tuberculous meat would occupy too much space; suffice it to say that the German law on this subject is so clear and comprehensive as to enable those entrusted with its execution to proceed in a uniform manner all over the country, securing thus safety to the consumer and avoidance of hardship to the butcher.

It should be clearly understood that the junior inspector can only stamp animals as "tauglich," or quite healthy, and cannot use any other stamp. The senior, on the other hand, may also stamp a preliminarily condemned carcass as "tauglich," provided he does not agree with the junior in condemning it. To him is also given the power of stamping meat as "minderwertig," or of poor quality; "bedingt tauglich," or usable after sterilisation; or "untauglich," unusable. Thus it will be seen that should an animal be passed by the junior official it goes free into the market, and therefore the public depend on his thoroughness to safeguard their interests. The higher official's chief duty is to decide what is to be done with unhealthy meat, the healthy carcasses receiving little or no attention from him.

It is worthy of note that every animal slaughtered is insured by an insurance company who guarantee to pay a fixed sum which represents the average worth of the class of animal to which it belongs should it be condemned.

Pigs are slaughtered in specially constructed halls where these animals alone are dealt with. These buildings are well lit by windows placed in such a position as freely to admit light, without permitting the direct rays of the sun to come into the vicinity of the place where the meat is hung. There is also abundant cold-storage accommodation provided and arranged so that an animal hanging from overhead rails may be conveyed from the place of slaughter to the cold chambers without ever having been removed from the rails while being cleaned and dressed.

On account of the fact that the flesh of pigs is consumed in large quantities in Germany in the form of ham, which is merely smoked and has received no cooking, and because of the peculiar liability of that animal to trichinosis, a special form of inspection over and above that employed for other cattle is necessary. To discover the presence of trichinæ four samples are taken from each pig by a man who does nothing else, as follows: (1) from the midriff of the diaphragm; (2) from the diaphragm in the region of the ribs; (3) from the laryngeal muscles; and (4) from the muscles on the under side of the tongue. They are put into a small metal box, which bears a number corresponding to that stamped on the carcass of the animal from which they were removed, and are then conveyed to special rooms, where they are microscopically examined. There are some three hundred "trichinæ examiners," as they are called, in the Berlin abattoir. These persons receive their training in the slaughter-house and this vocation is not confined to men alone, many women being also employed for the purpose. To give an idea of the exactitude with which the search for trichinæ is prosecuted it may be mentioned that the work is carried out in some eight large and well-lighted apartments, each of which is supervised by a specially trained official, whose duty it is to see that the examiners use due diligence and care and who settles any difficulties in diagnosis which may arise. The examiner cuts six small pieces of about the size of a grain of wheat from each of the four samples presented to him. These he places on a specially prepared piece of glass, divided into 24 divisions provided for the purpose, and then lays a corresponding piece of glass on the top and exercises gentle pressure. He next clamps the two glass plates together by means of screws and 24 microscopic specimens are then ready for examination. The rule generally followed is that if he has carried out the preparation in a proper manner each specimen is so thin as to enable him to read print of an ordinary size through it. The microscopical examination is then proceeded under a magnification of from 40 to 50 diameters; greater magnification is unnecessary and unsatisfactory, as more time would be required for examining the specimens were it employed. 18 minutes are spent in examining the six specimens made from each sample, and after eight samples, or 48 microscopic specimens, have been examined no more must be done by that individual for one and a half hours. Not more than 20 samples in all may be examined in the course of a day by one person. These examiners are paid by piecework, receiving 60 pfennig (or about 7½*d*.) for each sample examined.

Now it may be thought that the animal (cow, sheep, or pig) having been inspected twice in the live state and very thoroughly after slaughter might be permitted to go free without further supervision. Yet, no sooner does the carcass come into the public market or is exposed cut up in joints for sale in the retail shops, than it once again comes under the supervision of the police Governmental department. This shop inspection fulfils three purposes: (1) it prevents meat bearing any other than the "tauglich," or wholesome, stamp being sold; (2) it prevents the meat of animals killed in the country districts in the neighbourhood of Berlin and which does not bear the Berlin stamp being exposed for sale; and (3) properly stamped but decomposed meat is also detected. Thus from the moment that an animal arrives in Berlin till the last fragment of the flesh is sold the powers that be never entirely lose sight of it.

In the year 1904 there were 164,815 cattle, 1,004,251 pigs, 165,391 calves, and 441,270 sheep slaughtered and inspected in Berlin. To carry out the work of inspection there were 47 qualified meat inspectors and 15 extra meat inspectors. The salary of these men commences at 2700 marks (or about £135) and increases by 300 marks (or about £15) every three years till it reaches 5000 marks (or about £250). They are, however, permitted to carry on private practice outside the slaughter-house in addition.

It has already been stated that the meat inspectors in Berlin are all duly qualified veterinarians who have undergone a special training in meat inspection, many of them as students having attended a slaughter-house for a period of three months in order to gain a practical insight into the matter. Now, it is a much debated point in Britain whether meat inspection falls more into the province of the veterinary surgeon or the medical man. Thus it is asserted that a medical man has not a sufficient knowledge of the diseases and signs of disease in cattle to enable him to carry out this function properly; a special course of training in a slaughter-house would, however, qualify him for the purpose. May it not with equal truth be said that the veterinary surgeon is ignorant of the course and character of disease in the human subject, and thus is unable to deal adequately with the many problems with which the inspector of meat finds himself continually face to face? The fact should also not be lost sight of that the German veterinary surgeon is a man of considerable scientific attainments. Again, would it be possible for the medical officer of health, who does so much to diminish the spread of disease, properly to supervise the standard of meat consumed by the public were the control over meat inspection and slaughter-houses to be taken out of his department? It is quite obvious that the man, whoever he may be, responsible for the character and quality of the meat which leaves the abattoir must have received a sound and practical scientific training, and have made a special study, and be thoroughly conversant with the many forms of disease in animals, and also their mode of attack and development in man.

It is often asserted that meat inspection is of quite secondary importance in this country on account of the thorough cooking to which our meat is subjected. It is quite true that as a race we do not consume the flesh of pigs in a raw condition, yet whether this be a desirable state of matters or not is open to question. The grilling or frying of ham or bacon, unless very carefully carried out, hardens the muscle fibres, rendering them extremely difficult of digestion, whereas ham which has merely been smoked, without coming in contact with the fire, is at once palatable and easily digested. Raw flesh forms a very suitable form of nourishment in convalescence or for persons suffering from dyspepsia, being frequently retained and digested when nothing else can be borne. In this country, however, one would fear to administer it lest the patient in his weakened condition would have pathogenic organisms or parasites introduced into his system. In Berlin raw meat might be, and is, ordered with impunity owing to the thoroughness with which inspection is carried out. Is it not questionable, however, whether our meat is always so thoroughly cooked as we imagine it to be? Has the centre of the average grilled steak been raised to a sufficiently high temperature to insure the destruction of parasites or micro-organisms which may be lurking in the muscular substance, or in the

small lymphatics running through it, or is the temperature which penetrates into the centre of a large roast of meat or other joint sufficient to effect the same purpose? Again, even if we grant that in the majority of cases the micro-organisms themselves are destroyed, we have yet to consider whether the toxins elaborated by their agency are affected by heat, and even if they are, whether their ingestion into the system is likely to prove injurious to health? Surely it is strange that in a country where meat is eaten twice, if not three times, a day by the majority of the inhabitants animals should still be permitted to be slaughtered in private abattoirs, situated often amidst the most insanitary surroundings and carried out without that degree of humanity, cleanliness, and precision which characterises the process in a country where all must be done under the eye of the skilled inspector.

THE REPORT OF THE MEDICAL OFFICER OF HEALTH OF THE ADMINISTRATIVE COUNTY OF LONDON.

II.[1]

RESUMING our notice of this interesting report we observe that particular attention is devoted to an examination of the actual causes responsible for the sad waste of infant life which at an earlier stage of the report had been conclusively shown to persist in the metropolis. In a table contained in the report of the Committee on Physical Deterioration, to which frequent reference has been made in these columns, the infantile mortality in selected groups of English counties was compared in two quinquennial periods separated by an interval of 25 years. That table showed that in urban England throughout the quinquennium 1898–1902 infants died even more rapidly than in the period 1873–77, the maintenance of this high rate being especially due to excessive fatality from diarrhœal diseases and from prematurity and congenital defects. In the report now before us a table for London is given showing the mortality in "trimesters" of the first half year of life in three quinquennia, commencing with the year 1888, when the deaths were first abstracted in periods of three months for the Registrar-General's reports. By this table the fact is established that whilst infantile mortality at ages under one year has increased since 1888 by nearly 1 per cent., it is in the first six months of life that the increase has been most conspicuous. As typical of what obtains in other London districts where the sanitary and social conditions are similar Sir Shirley F. Murphy quotes the case of St. Pancras, the medical officer of health of which borough has carefully analysed the present causes of infant mortality, comparing them with those that obtained in the same area a quarter of a century ago. In his recent annual report Dr. J. F. J. Sykes points out that so far from there having been improvement in recent years the infant mortality was slightly higher in 1901 than it had been in 1877. The death-rate from premature births and congenital defects in the earlier period was only about one-half that in the later, the mortality in 1901 being almost entirely confined to infants in the first week of life. Diarrhœal diseases and diseases of the stomach and liver appear to have been more destructive in that year than in 1877 by about 50 per cent. In Dr. Sykes's opinion the statistics of St. Pancras indicate "that infants are dying at a younger and younger age, apparently from increased immaturity at birth, from diminished viability or capacity for survival, and from the increased prevalence of artificial feeding." Criticising the figures in the report of the Committee on Physical Deterioration, as well as those in the St. Pancras annual report, Sir Shirley Murphy is of opinion that the increases referred to in both cases may be apparent merely and may be due to natural causes. He thinks that better certification of deaths, especially those of children who survive their birth by a very brief period, would account for much of the apparent increase of mortality in early life from premature birth, &c. He further emphasises the well-known fact that diarrhœal diseases are largely governed by temperature. With respect to this difference of opinion between highly competent authorities, we would recall attention to what has already been shown in the present report—viz., that excessive infantile mortality is practically confined to the poor dwellers in overcrowded tenements. The facts are not before us, but we should regard it as highly probable that in their sufferings these luckless infants receive only a minimum of nursing or of medical care, the latter perhaps for only a few days or even hours before death. What proportion of these infants have been medically attended we know not, but from a cursory inspection of considerable samples of medical certificates relating to such cases we hesitate to base upon them any very definite conclusions on one side or the other.

With reference to artificial feeding and its well-known disastrous effects on infant health and life Sir Shirley Murphy quotes some interesting statistics prepared by Dr. W. J. Howarth, the medical officer of health of Derby, who has taken the trouble of analysing the causes of death of more than 8000 infants under one year of age and of recording in considerable detail their life-history. The figures show that, speaking generally and without reference to particular causes of death, hand-fed infants die in greater proportion than those who are fed first from the breast and afterwards by hand, and these again in greater proportion than those who are wholly breast-fed. The statistics of mortality from diarrhœa and epidemic enteritis are especially instructive, inasmuch as the numbers dealt with are sufficiently large to form a fair basis for calculation. From these we find that among 5278 breast-fed children only 86 died out of every 10,000 children born; among 1439 children first breast-fed and afterwards fed by hand, 216 died; whilst among 1626 exclusively hand-fed children not less than 517 died out of every 10,000 born.

Throughout London generally sanitary authorities and their officers are now devoting increased attention to the study and prevention of infantile mortality. In June, 1905, a conference was held at St. Pancras town hall under the presidency of Dr. R. M. Beaton, the present chairman of the public health committee. This conference was largely attended and resolutions were adopted which aimed at the bringing of newly born infants under the early supervision of the health authority, with a view of securing the better treatment and feeding of infants. In order to secure prompt information of the birth of infants female inspectors are employed by most of the London sanitary authorities and the Registrar-General has authorised the local registrars to supply these inspectors with the addresses of parents the births of whose infants have been registered. Moreover, the London County Council, as administrators of the recent Midwives Act, has arranged to receive from midwives weekly the names and addresses of patients attended by them and this information is forwarded to the medical officers of health concerned. From the fact that the returns received in this way are at the rate of about 30,000 births per annum, or about a quarter of the total births, the newly born infants in the poorest London districts will by this means be brought under supervision shortly after birth. The action hitherto taken by the sanitary authorities as a result of this information consists in the visitation of the mothers by female inspectors and the giving by them of printed and verbal advice as to the management and feeding of children. In Battersea, Lambeth, and Finsbury milk depôts have been provided either by the municipalities or by charitable effort, and in Holborn the borough council has made arrangements for the sale in suitable cases of wholesome milk for infant food at a reasonable cost to the parents.

Coming to the question of general mortality as it affects all ages of the population Sir Shirley Murphy provides the usual stereotyped tables and diagrams. In a preliminary table relating to the principal causes of death we note that the diseases showing excessive mortality in 1905 as compared with the decennial average are the following: pneumonia, cancer, and diseases of the urinary system; the remaining diseases, 17 in number, including those contributing most largely to the aggregate mortality, were in 1905 less fatal than the average. In another table the mortality in the several metropolitan boroughs is shown, the death-rates from certain diseases or groups of disease being given, after correction for deaths occurring in public institutions, and the deaths from cancer and pulmonary tuberculosis having been further corrected for age differences of population.

(To be concluded.)

[1] The first notice appeared in THE LANCET of Jan. 19th, 1907, p. 185.

ECONOMIC PROBLEMS IN THE PRACTICE OF MEDICINE.

DR. LAURISTON E. SHAW, President of the Marylebone division of the Metropolitan Counties branch of the British Medical Association, took the chair on Jan. 24th at a meeting held at the rooms of the Medical Society of London to discuss economic problems in the practice of medicine.

Dr. R. C. BUIST moved the following proposition:—

That the development of properly organised systems of mutual assurance for the costs of illness offers the most readily available method of reducing the admitted evils of excessive medical charity and the misuse of hospitals.

He said that so many people flocked to the great medical charities because they thought they were getting special skill at the hospitals that medical men must convince them that that skill was at their disposal by means other than by the abuse of the charities. For that purpose he suggested some system of insurance and the voluntary development of the principle seemed more practicable than the compulsory development of the plan. The provision offered by a voluntary system could be complete, including sick pay, medical attendance, and medicines. The essential conditions of satisfactory medical attendance were that the patient must be able to choose his medical man and that the remuneration to the latter must be adequate. Any such system must be based on the agreement of the whole profession. The work must be open to every practitioner who wished to do it and there must be local agreement as to the rates of remuneration for which the work must be done. He advocated the system called the Public Medical Service which was a local organisation undertaken by practitioners and served by all medical men who wished to take a part in the work. In those places where public medical service had been established the work was done economically and the patients had freedom to change their medical advisers if there was dissatisfaction.

Mr. H. W. ARMIT said that any properly organised system of insurance against the cost of sickness and accident which would apply to the mass of the population must be an enormous undertaking but would solve the problem if well conducted. The German system formed an excellent basis to work upon, even though it would not be wise to adopt it in its entirety in this country. All medical men should be prepared to take their share of the work at a reasonable rate of remuneration and all workmen earning less than £2 a week should be compelled to subscribe to the funds of the system. For the class of person earning from £110 to £300 a year no form of compulsory insurance was practicable. Workmen whose earnings are irregular would come under the Poor-law relief and those who spent their money in drink and other excesses could be dealt with in a penal way. The big insurance companies might be asked to issue policies to persons with incomes from £110 to £300 covering the charges made for medical attendance and for consultations with specialists when necessary. In such a scheme for each workman earning £2 a week a card would be issued and the medical practitioner would treat the patient according to contract and would receive payment from the institution insuring the workman. He contended that hospitals should only admit patients who produced their cards signed by the practitioner in charge of the case. No person whose income exceeded £300 per annum should be allowed to remain in hospital, except where it would be dangerous to remove the patient after first aid had been given. He thought that no voluntary insurance system for the lower wage-earner would meet with success. He suggested that the British Medical Association should prepare a Bill for compulsory insurance against sickness and accident.

Mrs. M. A. D. SCHARLIEB, M.D., said that medical women must not be excluded from coöperation in any scheme suggested. Medical men and medical women must work together so that the whole profession would be able to do its duty to the poor of the country without undue pauperising and indiscriminate charity.

Dr. J. H. KEAY was disappointed with the position taken up by Dr. Buist. Dr. Keay did not consider that a scheme of optional insurance would meet the case. The time had gone by for relying upon anything but compulsory insurance.

Mr. G. GREEN said that actuarily there would be no difficulty in deciding what premiums were necessary in the case of the different systems of insurance. Any national system would necessarily be more successful than an optional and partial one.

Sir HUGH BEEVOR sent a communication in which he said that the recent hospital conference recommended the provision of nursing homes, but he questioned whether nursing homes would be as efficient economically as hospitals. At first sight insurance seemed to be the most ready solution of the problem of hospital abuse, but he was not over-sanguine as to the possibility of this method of meeting the difficulty.

Dr. J. H. DAUBER said that the motion submitted appeared to him to be a counsel of perfection and he did not consider that the medical profession had any power to enforce it.

Mr. F. R. HUMPHREYS having addressed the meeting, Dr. R. BOXALL pointed out that the whole effectiveness of sick insurance depended on the system being properly organised.

Dr. BUIST having replied, the motion was put to the meeting and carried unanimously.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN 76 of the largest English towns 7874 births and 5584 deaths were registered during the week ending Jan. 26th. The annual rate of mortality, which had been equal to 22·4, 20·7, and 18·1 per 1000 in the three preceding weeks, rose again slightly to 18·2 in the week under notice. During the first four weeks of the current quarter the death-rate in these towns averaged 19·9 per 1000, the rate during the same period in London being 20·6. The lowest death-rates in the 76 towns during last week were 8·1 in Hornsey, 10·3 in Grimsby, 11·4 in Tynemouth, and 11·7 in Burton-on-Trent; the rates in the other towns ranged upwards to 25·6 in Hull and in Middlesbrough, 31·5 in Stockton, and 32·4 in Newport (Mon.). The 5584 deaths in the 76 towns showed an increase of 35 upon those returned in the previous week, and included 416 which were referred to the principal epidemic diseases, against 423 and 38 in the two preceding weeks; of these, 125 resulted from whooping-cough, 97 from measles, 80 from diphtheria, 45 from diarrhœa, 42 from scarlet fever, 25 from "fever" (principally enteric), and two from small-pox. The deaths from these epidemic diseases were equal to a mean annual rate of 1·4 per 1000 in the 76 towns; the rate in London from the same diseases did not exceed 1·1. No death from any of these epidemic diseases was registered last week in Sunderland, Gateshead, Wolverhampton, Northampton, or in nine other of the 76 towns; the annual death-rate therefrom, however, ranged upwards to 3·5 in Wigan, 4·5 in Walthamstow, 5·1 in Hull, and 6·1 in Middlesbrough. The 125 fatal cases of whooping-cough showed a further considerable increase upon recent weekly numbers, and caused an annual death rate of 1·7 in Willesden, 2·0 in Middlesbrough, 2·1 in Stockport, and 3·3 in Walthamstow. The deaths from measles, however, showed a further marked decline, although they caused rates of 1·8 in Wigan and in South Shields, and 3·5 in Hull. Diphtheria caused the largest proportional fatality in Derby, Berwick, Croydon, and Middlesbrough; scarlet fever in Newport (Mon.); and "fever" in Middlesbrough. The two fatal cases of small-pox occurred in Hull and in Cardiff. No case of small-pox has been under treatment in the Metropolitan Asylums Hospitals since the end of June last. The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and in the London Fever Hospital, which had steadily declined in the four preceding weeks from 3846 to 3405, had further fallen to 3291 at the end of the week under notice; 307 new cases were admitted to these hospitals during the week, against 285 and 325 in the two previous weeks. The deaths in London referred to pneumonia and other diseases of the respiratory organs, which had been 718, 620, and 446 in the three preceding weeks, rose again during the week under notice to 484, and exceeded the corrected average in the corresponding week of the last five years by 92. The causes of 53, or 0·9 per cent., of the deaths registered during the week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in Leeds, Bristol, West Ham, Bradford, Newcastle-on-Tyne, Hull, Salford, and in 47 other of the 76 towns; the proportion of uncertified deaths, however, again showed marked excess in Birmingham, Liverpool, St. Helens, South Shields, and Gateshead.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been equal to 22·9, 20·8, and 20·5 per 1000 in the three preceding weeks, further declined to 19·1 in the week ending Jan. 26th, but exceeded the mean rate in the 76 English towns by 0·9. The rates in the eight Scotch towns ranged from 15·6 and 15·8 in Leith and Aberdeen, to 22·0 in Edinburgh and 26·9 in Perth. The 662 deaths in the eight towns showed a further decline of 51 from the numbers returned in the three preceding weeks, and included 71 which were referred to the principal epidemic diseases, against 67 and 80 in the two previous weeks. These 71 deaths were equal to an annual rate of 2·0 per 1000, which exceeded by 0·6 the rate from the same diseases in the 76 English towns; they included 25 which were referred to "fever," 16 to whooping-cough, 16 to diarrhœa, seven to scarlet fever, four to diphtheria, three to measles, and not one to small-pox. The 25 deaths from "fever" showed a further marked increase upon recent weekly numbers, and included 21 in Glasgow, two in Edinburgh, and one each in Leith and Greenock; 20 of the fatal cases in Glasgow as well as the three returned in Edinburgh and Greenock were certified as cerebro-spinal meningitis. Of the 16 fatal cases of whooping-cough, showing a decline from recent weekly numbers, 11 occurred in Glasgow, and four in Aberdeen; and ten of the deaths referred to diarrhœa were returned in Glasgow. Three deatho from scarlet fever occurred both in Glasgow and Edinburgh, two from measles in Edinburgh; and two from diphtheria in Dundee. The deaths in the eight towns referred to diseases of the respiratory organs, including pneumonia, which had been 185 and 177 in the two preceding weeks, further declined to 134 in the week under notice, but exceeded the number returned in the corresponding week of last year by 24. The causes of 33, or 5·0 per cent., of the deaths registered during the week in the eight towns were not certified or not stated; the mean proportion of uncertified deaths in the 76 English towns during the same week did not exceed 0·9 per cent.

HEALTH OF DUBLIN.

The annual death-rate in Dublin, which had been equal to 31·9, 29·0, and 27·5 per 1000 in the three preceding weeks, rose again to 28·6 in the week ending Jan. 26th. During the first four weeks of the current quarter the death-rate in the city averaged 29·2 per 1000, the mean rate during the same period being only 20·6 in London and 21·3 in Edinburgh. The 214 deaths of Dublin residents during the week under notice showed an increase of eight upon the number in the previous week, and included seven which were referred to the principal epidemic diseases, against eight and 11 in the two preceding weeks. These seven deaths were equal to an annual rate of 0·9 per 1000, and included five from whooping-cough, one each from "fever," and scarlet fever, and not one either from diphtheria, measles, diarrhœa, or small-pox. The five fatal cases of whooping-cough corresponded with the number in the previous week. Six inquest cases and seven deaths from violence were registered during the week; and 90, or 42·1 per cent., of the deaths occurred in public institutions. The causes of four, or 1·9 per cent., of the deaths registered in the city during the week were not certified; the percentage of uncertified deaths in the week under notice was equal to 7·9 in Edinburgh, while in London all but one of the 1647 deaths were duly certified.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Staff Surgeon: A. H. Jeremy to the *Fox*, temporary, on recommissioning. Surgeons: H. B. Hill to the *Victory* for Physical Training School, G. D. Walsh to the *Hampshire*, and G. H. S. Millin to the *Halcyon*.

ROYAL ARMY MEDICAL CORPS.

Colonel J. J. Morris, administrative medical officer, Portsmouth Coast Defences, is granted leave of absence from Feb. 1st to April 9th next. His duties will be carried out by Lieutenant-Colonel W. G. A. Bedford, C.M.G. Major C. J. Healy, from Ceylon is appointed for duty at Londonderry. Captain B. S. Bartlett, from India, is posted to the Eastern Command for duty. Lieutenant G. F. Rugg is posted to the Eastern Command.

ROYAL ARMY MEDICAL CORPS IN INDIA.

The following appointments have been made:—Lieutenant-Colonel D. O'Sullivan, to command the Station Hospital, Secunderabad; Lieutenant-Colonel T. J. R. Lucas, C.B., to command the Station Hospital, Bangalore; Major H. S. Peeke, to command the Station Hospital, Campbellpore; Major D. Stiell, to command the Station Hospital, Dinapore; Major M. Boyle, to Station Hospital, Bareilly, for duty; Captain A. O'B. Wroughton, to command Station Hospital, Malapuram; Lieutenant W. C. Nimmo, to Station Hospital, Fyzabad, for duty on completion of course of instructions in sanitation at Lucknow; and Lieutenant M. Keane, to Meerut on completion of course of instructions in sanitation at Lucknow.

The undermentioned officers, on arrival from England, are posted as follows: Lieutenant-Colonel H. S. McGill to 6th (Poona) Division; Lieutenant-Colonel R. L. R. Macleod to 4th (Quetta) Division; Lieutenant-Colonel H. P. G. Elkington to 5th (Mhow) Division; Lieutenant-Colonel J. J. O'Donnell to 5th (Mhow) Division; Major F. W. Begbie to 5th (Mhow) Division; and Captain H. G. Martin to 6th (Poona) Division.

INDIAN MEDICAL SERVICE.

The King has approved of the following promotions made by the Government of India. Lieutenants to be Captains (dated August 31st, 1906): Robert Kelsall, John Hay Burgess, Charles Hildred Brodribb, John McCallum Anderson Macmillan, Clifford Allchin Gill, William Edward James Tuohy, Terence Francis Owens, Richard Francis Steel, George Francis Innes Harkness, Arthur Charles Ingram, Gordon William Maconachie, Ernest William Charles Bradfield, Alexander William Montgomery Harvey, Charles Isherwood Brierley, John Brown Dalzell Hunter, and Edward Temple Harris.

ARMY MEDICAL RESERVE OF OFFICERS.

The undermentioned Surgeon-Lieutenant-Colonels having resigned their commissions in the Volunteers cease to belong to the Army Medical Reserve of Officers:—George England and Joseph Willoughby Hodgson.

IMPERIAL YEOMANRY.

Hampshire (Carabiniers): Surgeon-Lieutenant H. A. Ahrens to be Surgeon-Captain (dated Nov. 28th, 1906).
Montgomeryshire: Surgeon-Lieutenant H. Connop resigns his commission (dated Dec. 1st, 1906).

VOLUNTEER CORPS.

Rifle: 2nd Volunteer Battalion, the East Surrey Regiment: Surgeon-Lieutenant-Colonel and Honorary Surgeon-Colonel W. Gandy is borne as supernumerary whilst holding the appointment of Brigade Surgeon-Lieutenant-Colonel, Senior Medical Officer, East Surrey Volunteer Infantry Brigade (dated June 1st, 1906). 1st Volunteer Battalion, the Royal Sussex Regiment: Surgeon-Lieutenant H. V. Pryce resigns his commission (dated Jan. 1st, 1907). 5th (Glasgow Highland) Volunteer Battalion, the Highland Light Infantry: Surgeon-Lieutenant-Colonel A. Macphee is granted the honorary rank of Surgeon-Colonel and resigns his commission, with permission to retain his rank and to wear the prescribed uniform (dated Dec. 29th, 1906).
Royal Garrison Artillery (Volunteers): 1st Edinburgh (City): Surgeon-Captain R. B. Purves resigns his commission (dated Dec. 21st, 1906). 1st Kent: Surgeon-Lieutenant-Colonel C. Arrol is granted the honorary rank of Surgeon-Colonel (dated Jan. 1st, 1907).
Royal Engineers (Volunteers): 2nd Lanarkshire: Surgeon-Lieutenant J. A. Cook resigns his commission (dated Dec 13th, 1906). 1st (Sheffield) Yorkshire (West Riding): Surgeon-Major C. H. Willey is granted the honorary rank of Surgeon-Lieutenant-Colonel (dated Dec. 30th, 1906). Surgeon-Major and Honorary Surgeon-Lieutenant-Colonel C. H. Willey resigns his commission, with permission to retain his rank and to wear the prescribed uniform (dated Dec. 31st, 1906).

ROYAL ARMY MEDICAL CORPS (VOLUNTEERS).

Cheshire Bearer Company: Surgeon-Major George William Sidebothon, from the 4th Volunteer Battalion, the Cheshire Regiment, to be Major (dated Dec. 1st, 1906). East Surrey Bearer Company: John Alexander Preston, gentleman, to be Lieutenant (dated Dec. 8th, 1906).

ROYAL ARMY MEDICAL CORPS EXAMINATION.

The following is the list of successful candidates for commissions in the Royal Army Medical Corps at the recent examination in London for which 78 candidates entered, of the successful 30 candidates 14 were university graduates:—

Names.	Marks.	Names.	Marks.
W. K. Beaman	612	J. H. Gurley	508
C. Cassidy	580	F. H. M. Chapman	507
A. D. Fraser	575	A. C. Elliott	505
M. P. Leahy	565	J. du P. Langrishe	503
F. T. Turner	555	W. G. Avies	500
A. I. Fortescue	550	W. B. Purdon	497
H. G. Gibson	548	H. M. J. Perry	495
J. L. Wood	546	J. C. Hart	493
S. Field	538	M. O. Wilson	493
R. D. O'Connor	533	T. H. Scott	491
D. F. Mackenzie	529	L. A. A. Andrews	489
J. E. M. Boyd	528	G. F. Rudkin	484
G. Carlisle	517	V. T. Carruthers	482
E. M. Middleton	516	H. W. Farebrother	481
O. R. McEwen	510	F. Casement	479

ENTERIC FEVER IN INDIA.

The following subjects were discussed at the second meeting of the standing committee on enteric fever recently held at Simla, and resolutions passed concerning them—viz., removal and disposal of sewage, washing of clothes, appointment of special sanitary officers for large cantonments, organising regimental supervision of sanitation in lines, improved means for removing infected clothing from barracks to hospitals for disinfection, disinfectors for excreta, the provision of heat-exchange water purifiers for use in camps and on service, means of conveying meals from kitchens to barrack rooms, increasing the number of clinical laboratories at divisional and brigade headquarters.

It is satisfactory to be able to record a considerable and progressive decrease in the cases of enteric fever occurring recently amongst British troops, the fresh admissions under this heading throughout the whole of India being for the last three months as follows: September, 117; October, 66; November, 31. No doubt the increased attention paid by the authorities to sanitation has already contributed to this reduction.

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS.

The January number of this journal contains many papers on a variety of subjects of more or less special interest to officers of the medical services, dealing as they do with sanitation in India, enteric fever, malaria, and diseases of hot climates, together with those incidental to life in the public services. The first article, by Major F. Smith, D.S.O., R.A.M.C., is on the Soldier's Heart and the Civilian's. The liability of the soldier to acquire an increased pulse-rate and palpitation has been often remarked upon and described under such titles as "irritable heart," the "trotting heart," &c. But as the result of an experimental comparison conducted on a limited scale Major Smith is led to conclude that the soldiers' hearts do not beat more rapidly than civilians' hearts, that the influences operating on soldiers are also operating on those of civilians, and he thinks that some valuable information might be gained by a more extended examination and inquiry into the subject. Colonel Francis J. Lambkin, R.A.M.C., has a report on "So-called Virulent Syphilis and its Treatment." This number also contains some good and discriminating reviews.

ADMINISTRATIVE MEDICAL OFFICERS.

The *Broad Arrow* states that the Army Council has decided that administrative medical officers shall in future have such administrative medical charge and authority as regards their areas as is now vested in principal medical officers. Administrative medical officers and senior medical officers of the larger stations will, before submission to higher authority, bring such questions to the notice of local commanders, in order that the latter may have an opportunity of expressing their opinions thereon.

SWANSEA GENERAL HOSPITAL.—At a meeting of the Swansea hospital board held on Jan. 22nd a resolution passed by the local branch of the British Medical Association was read. It stated that in consequence of the increasing abuse of the hospital as a charity organisation the Association urged the appointment of a special officer to investigate the circumstances of all applicants for treatment before they are seen by the medical staff. After some discussion it was decided to refer the matter to the house committee of the institution.

Correspondence.

"Audi alteram partem."

THE HOSPITAL FUNDS AND THE MEDICAL PROFESSION.

To the Editors of THE LANCET.

SIRS,—All friends of the voluntary hospital system are grateful to you for the constant help and encouragement you give to the great hospital funds which promise to be saving of our voluntary hospitals. This gratitude will only be increased by your leader of Saturday last on the steps taken by the King's Fund and the Hospital Sunday Fund respectively to place their constitution on a more permanent and satisfactory basis. Such a step on their part is the more reasonable from their increasing importance and the many indications of public confidence. Such confidence is a great treasure and cannot be too jealously guarded. One of its advantages is that it permits a candid criticism of both funds and of all doubtful or exceptional proposals. I ask leave to say two or three words on your loyal and friendly criticism.

First, in regard to Section 3 of the Bill providing for the management of the King's Fund and putting all power over the general council and the committees, over the monies collected and over their distribution into the hands of the Sovereign or, through him, those of the Heir Apparent. It will be astounding news to the profession and the public that such a proposal should be made in Great Britain, in a country which boasts of its voluntary hospitals and which rejoices in a king and heir so splendidly loyal to the constitutional principles which underlie all public finance, especially monies supplied on the voluntary principle. If free and unhampered discretion is not allowed to, or is not used by, those in the management who are supposed to represent the public, it may well be feared that the delicate system of voluntary institutions will be fatally impaired and that on the King or his Heir will fall all the blame. Doubtless we are in some degree spoiled by having such a King and Heir Apparent as at present. And we cannot doubt that the Council of the King's Fund—for we could never blame His Majesty or His Royal Highness the Prince for this remarkable proposal—have been misled by the subtle influence of this fact. Nevertheless, they must be reminded of their duties and cannot be excused for sinking their responsibilities as trustees of funds the scale of which is undoubtedly largely due to the benevolent and kindly nature of the Sovereign's interest in this great charity. Neither the King nor the British public will think the less of them for modifying or withdrawing a clause which shocks every principle of hospital or public finance.

Your reference to the action of the metropolitan branch of the British Medical Association and the Hospital Sunday Fund will, I am sure, be taken in good part by this Fund. But I am not so sure that the branch is so much aggrieved as it would have the public and the profession think. Certainly it has no such grievance as to justify it in opposing before the Privy Council the grant of a charter to the Hospital Sunday Fund on the ground of non-representation of the medical profession on the Fund. It is by more genial and friendly methods than this that the branch is likely to effect its objects. The objectors write as if the medical profession had no representative on the Fund. It may surprise the profession to know that Sir William Church, Mr. Bryant, Sir Dyce Duckworth, Mr. Willett, Sir Frederick Treves, Sir Stephen Mackenzie, and Mr. Pearce Gould are on the Hospital Sunday Fund, to say nothing of general practitioners, two of whom are on the Fund. Not only so. It is within my knowledge that the offer of a seat on the council has been made at least once to another general practitioner, highly respected and of much weight in the council of the British Medical Association and of the metropolitan branch thereof. Further, let me say that Sir William Church is a member of the distribution committee, if not chairman, and that Sir William Church was chosen very lately to preside over a very special and important meeting of the British Medical Association. I should be, of course, delighted to see more general practitioners on the council and this can easily be arranged through the action of the churches of London which contribute the money.

Under these circumstances, Sirs, I think you will agree

that the British Medical Association is rather apt at the creation of grievances and that the Hospital Sunday Fund might expect a little different treatment at its hands.

I am, Sirs, yours faithfully,

Highbury-place, N., Jan. 29th, 1906. JAMES GREY GLOVER.

THE DISCOVERER OF THE ETIOLOGY OF PUERPERAL FEVER.

To the Editors of THE LANCET.

SIRS,—Will you kindly grant me space for a few remarks on the question of the discovery of the etiology of puerperal fever and the claims of priority advanced on behalf of Oliver Wendell Holmes and of Semmelweis? I only wish to state certain conclusions the truth of which I hope soon to demonstrate to all unprejudiced readers of the history of medicine. There can be no real question of priority. Holmes did good service to obstetrics and consequently to humanity, but he discovered nothing; he added nothing to the sum of the scientific knowledge of obstetrics by his essay on "The Contagiousness of Puerperal Fever." Semmelweis, on the other hand, discovered the true cause of puerperal fever; he laid the scientific basis of our prophylaxis and so rendered a service to humanity comparable only with that of Jenner. Moreover, he devoted the whole of his too brief span of life to the spread of his doctrine (*Lehre*), and he lived long enough to put an end to the worst ravages of puerperal fever in the lying-in hospitals of Europe, for many, who openly jeered at his fanaticism and his eccentricities, privately applied his principles to the prevention of the disease in their own institutions. They gave their patients the benefit of the doubt.

Holmes collected evidence from the practical experience of other men, for he had comparatively little practical experience of his own, and, in some measure like a barrister, he marshalled this evidence and stated his conclusions in an essay of which the most striking feature is its extraordinary literary charm, at least in the estimation of those who are attracted by his style. Holmes entered upon his inquiry with the preconception which he held in common with most of his contemporaries that: "The disease known as puerperal fever is so far contagious as to be frequently carried from patient to patient by physicians and nurses." He gives this sentence a very prominent position in the reprint of 1855 as a quotation from the original essay of 1843; and I submit that the careful study of the essay as a whole must compel the reader to the conclusion that this quotation contains the author's whole contribution to obstetric science. The authorities quoted by him throughout, and his practical directions as to the means of preventing the spread of the disease, all go to prove that Holmes was a contagionist like his more thoughtful contemporaries, no more and no less. For example, the remarkable eulogy which he bestows upon Gordon of Aberdeen reveals the essential character of his own opinions. He quotes Gordon's "terrible evidence," and he prints in capital letters Gordon's allegation that he "could venture to foretell what women would be affected." But Gordon treated his cases exactly according to Denman's methods, except that the Aberdeen women revolted at the blistering; and these therapeutic measures prove that he had no new conceptions about the nature of the disease. As to "foretell," Walsh used the identical word with regard to exactly similar circumstances in an essay which he published ten years before Gordon's and which must have been as well known to Gordon as were Denman's works, which he quotes.

The fact is they all held the barren doctrine of contagionism, the spread of the disease by some pervading unknown agency, a miasm, a "cosmic, telluric, atmospheric influence." This doctrine is implied, almost stated, in one of the final paragraphs suggesting methods of preventing the disease from being conveyed by the medical practitioner: "He would do wisely to relinquish his obstetrical practice for at least one month, and endeavour to free himself by every available means from any noxious influence he may carry about with him." No candid interpretation of this paragraph can surely lead to any conclusion except that which I have just stated. It is rank contagionism, not so enlightened as Eisenmann's "Kindbettfieber" published in 1834. But O. W. Holmes himself laid no claim to originality or to any discovery; the distinction was thrust upon him in his later years by admirers of the distinguished man of letters who magnified out of all recognition the services of the undistinguished man of science.

"I do not expect ever to return to this subject," Holmes wrote when commenting on the amenities of controversy to which he and his essay had been subjected by some opponents. Could the discoverer of the cause of a pestilence which was year by year hurrying innumerable young mothers prematurely to the grave, and, to use his own words, bowing the strength of manhood into the dust, could such a man have ever found it possible to abandon "this subject"? Yes, if only the subject of a semi-literary task; no, if the subject of a creed and of a crusade to which a man's whole life must be devoted.

Now after considering this calm, philosophic, though eloquent, exposition of the contagious doctrine and its practical consequences, let us turn to the achievement of Semmelweis and his devotion to that which he conceived to be his duty to humanity. Can any man read without pity and admiration the tragic story of the discovery and its disastrous consequences to the discoverer in his life-long struggle to spread his doctrine and to stay the plague? We deplore while we sympathise with the sufferings of the tender-hearted man, helpless amidst the scenes of misery and death in the Vienna hospital, but we are soon filled with admiration for the steadfast will and the clear intellect which grasped the relevant constant elements amidst the apparent chaos of elusive details and conflicting circumstances, and ultimately brought certain factors into causal relationship with the phenomena of the disease. Semmelweis had solved a problem which had baffled the most observant and philosophic physicians for many generations.

The pestilence no longer depends upon some mysterious "influence"; it is reduced to the pyæmia already too well known to surgeons. It is the squalid product of filth, of actual contact with decomposing animal matter. "The carrier of the decomposed animal organic matter is the examining finger, the operating hand, the instruments ..... anything which can be rendered unclean and then brought into contact with the genitals of the parturient or recently delivered woman." To compare this doctrine with opinions prevalent in New England or elsewhere about the same time is to compare unlike things; between them there is hardly a *tertium quid*. Semmelweis himself well expressed the consequent practical difference: "When English practitioners have the misfortune to lose several lying-in patients they are not satisfied with disinfection by means of washing with chlorine, but they set aside their midwifery practice for some weeks or take a tour of several weeks' duration in order to get completely rid of the puerperal contagion. We destroy the decomposed material by means of chloride washings and hold this disinfection for sufficient."[1]

Here was the position which Semmelweis had reached after much tribulation. "I do not expect to return to this subject," exclaimed Holmes. Semmelweis was never to leave "this subject"; he was to devote his sad existence to the pathetic struggle to establish "Meine Lehre." "Should it so happen, which God forbid, that it is not vouchsafed to me to see with my own eyes the happy time when both inside and outside the maternity hospitals of the whole world only cases of self-infection may be occasionally found, still the conviction that such a time must come sooner or later after me will brighten my dying hours (*erheitern*)."

Fritsch, writing a quarter of a century later, declared: "In the history of obstetrics there is a dark page, and its heading is 'Semmelweis.' Who could avoid feeling the powerful impression produced by his book? Even to-day whole pages of his deductions might stand in the most modern work. And the annihilating logic of his statistics! We young men to whom antipathies were unthinkable, to whom coarse tirades against 'genius misunderstood' were only wearisome reading, we find it incomprehensible that the logical conclusions from the doctrine of infection were nowhere drawn."

But although the "Lehre" was at first greeted with derision or hostility by the occupant of almost every chair of obstetrics in Europe, the logical conclusions came ultimately to be drawn and applied everywhere. Much had to be done by bacteriologists and by surgeons, especially by our own Lister, before the vast service to mankind which had been rendered by Semmelweis came to be seen in its due proportions; but the era which he foresaw has arrived, and it is now generally, almost universally, recognised that to

[1] Die Actiologie, &c., p. 198.

Semmelweis, and to him alone, we owe the modern etiology and pathology of childbed fever—"Puerperal-Fieber ist Wund-Fieber: Wund-Fieber ist Wundvergiftung," and "all infection comes from without." Upon these doctrines our prophylaxis and our therapeutics are entirely based.

I am, Sirs, yours faithfully,

Manchester, Jan. 21st, 1907. WILLIAM J. SINCLAIR.

To the Editors of THE LANCET.

SIRS,—Your annotation on "The Respective Merits of Semmelweiss and Oliver Wendell Holmes in the Treatment of Childbed Fever" does not give credit to the man who first proclaimed its highly contagious character—viz., Gordon of Aberdeen; and although according to Dr. T. C. Allbutt of Cambridge "the benefactor to whom the world's gratitude and memorial are due is he who *makes the thing go*," we must not forget him, who at such an early date did what was possible in his day to enlighten the profession on the subject.

I am, Sirs, yours faithfully,

JOHN HADDON, M.D. Edin.

Denholm, Hawick, Jan. 22nd, 1907.

THE INTRAMEATAL OPERATION.

To the Editors of THE LANCET.

SIRS,—May I be allowed to once again encroach upon your valuable space in order to reply to the inaccuracies contained in Mr. F. Faulder White's letter in THE LANCET of Jan. 5th, to which my attention has only just been drawn.

Mr. White is under a serious misapprehension when he says that he is gratified to find that I am "now in favour" of the intrameatal operation. If he will consult the *Clinical Journal* of May 24th, 1899, he will find a paper by me on Ossiculectomy which will convince him that I have been "in favour" of that procedure for some considerable time. As regards the paper on the mastoid operation to which he refers, I in no way withdraw one single word of what I then wrote. Mr. White (who at one time advocated the curing of every case of otorrhœa by irrigation) has written much about his operation, to which he has given the name of "otectomy" (literally, removal of the ear), but I have never read any account of it that does not plainly show it to be merely an ossiculectomy, with removal of the outer attic wall. The latter addition I, in common with other otologists, have done for several years past, as reference to the Transactions of the Otological Society will show. Mr. White writes as if he alone had advocated ossiculectomy and that in the face of opposition from every otologist; as a matter of fact, Mr. White, starting with universal irrigation, now pushes universal "otectomy" as zealously as he once insisted on the wickedness of operating at all.

In conclusion, I would like to add one word of comment upon Dr. Frederick Spicer's letter in THE LANCET of Jan. 5th. Mr. Charles J. Heath's former paper was read before the Otological Society and was there severely criticised, and most justly so.

I am, Sirs, yours faithfully,

MACLEOD YEARSLEY.

Upper Wimpole-street, W., Jan. 17th, 1907.

ABORTION AMONG THE ANCIENTS.

To the Editors of THE LANCET.

SIRS,—Referring to an annotation under this title published in THE LANCET of Jan. 19th, p. 178, where a recent paper by me is discussed, allow me to state briefly that your critic or reviewer does not seem to have understood me perfectly.

I never dreamed of saying that "abortion was not considered immoral by the early Christians," but I stated that neither the Old nor the New Testament mention that subject. I showed that among the Pagan philosophers opinions varied about the immorality of abortion, but that there is good reason for supposing that the so-called Orphic sects condemned abortion very strongly. The same horror for the practice of abortion was found to prevail in early Christian literature (later than the Gospels), is in accordance with the morals of Orphism, and may very well have borrowed its expressions from that source. All those who have studied the figures of Orpheus in the Roman catacombs and the texts of the early Fathers, claiming Orpheus as a disciple of Moses, will readily acknowledge the possibility of an Orphic influence on the written morals of Christianity, wherever the point at issue has been left untouched by the Holy Writ.

I never said or thought that Virgil, in the passage, Æneid VI., 426–30, had *meant* the infant victims of abortion. But it is well known to scholars that Virgil, especially in that part of his poem, imitated and combined Greek sources, often at second hand, and without understanding them as a modern scholar would try to do. Now, I have shown that in the passage in question victims of an unjust, premature, and violent death are grouped together; the only *apparent* exceptions are the newly born babes. So I ventured to suggest that, in the Greek source lost to us, but known to Virgil and followed by him with some sort of sluggishness, that apparent exception did not exist and that the newly born babes were the victims of abortion. Further, by a quotation of the pseudo-Petrine gospel, which has many points in common with Virgil's Greek and Orphic source, I made it pretty clear that my hypothesis may almost be considered as a certitude, inasmuch as we have a right to reason about a text which we do not possess, with the help of other texts derived from it. I would be astonished if any professional scholar maintained a contrary opinion after having taken cognisance of mine.

I am, Sirs, yours faithfully,

Paris, Jan. 22nd, 1907. SALOMON REINACH.

THE OPERATIVE TREATMENT OF ADHERENT PERICARDIUM AND CARDIAC HYPERTROPHY.

To the Editors of THE LANCET.

SIRS,—On July 28th of last year you did me the favour to publish in THE LANCET a paper on Pericarditis in Childhood. My chief incentive in publishing that paper was the hope—not realised—that my proposals for the surgical treatment of adhesive pericarditis and cardiac hypertrophy might be discussed by physicians and surgeons whether by way of approval or condemnation. I endeavoured to show by a study of the growth of the heart both in embryo and under pathological conditions that what the labouring heart in certain circumstances requires is *more room*, whether to grow in or to act in. I mentioned that to the derision of a reviewer of my book on "Cardiac Failure" (1897) I had indicated cardiac symphysiotomy as a possible triumph of surgery and was met with the retort that I had in any case exhibited a triumph of imagination. Towards the end of my paper I remarked: "I am aware that in speaking thus (in advocacy of the procedure) I do so on theoretical grounds and not from actual experience, but such thought has frequently preceded action ultimately justified by results, and I am not unhopeful that surgery, which has accomplished so much, may also in well-defined circumstances find a place in some cases of adherent pericardium. To return to our embryo, the growing organ requires a surplus of room to grow in; the overgrown organ requires more room to work in, and it may be that tethered by extraneous adhesion, *or not so restricted*, the hypermyotic heart may in the future and in some cases be provided with such by the genius and courage of some surgeon bold enough to undertake the task."

I was not aware when I wrote this passage, and indeed not until I read an interesting article on Some Points in the Pathology and Treatment of Adherent Pericardium by Professor Wenckebach of Groningen, which appeared in the pages of your contemporary the *British Medical Journal* (Jan. 12th, 1907), that all this had already been successfully done by surgeons acting under the inspiration of Professor Brauer of Heidelberg. The paper of the latter is published in Langenbeck's *Archiv für Klinische Chirurgie* (Vol. LXXI., 1903), and relates the result of the procedure in three cases. His patients were two men and a youth, aged respectively 50, 25, and 16 years. The principle of the operation undertaken was to provide the heart with more room to act in and less obstacle to pull against, and no attempt was made to open the pericardium or to break down possibly existent adhesions either within the sac or beyond the area of the external opening in the thorax which was made by the removal of ribs and cartilages and a portion of the sternum sufficient to allow of freer movement of the heart. In fact, there is nothing positive to show, notwithstanding the criteria of differential diagnosis given, that such adhesions existed, except that in the case of the man, 25 years of age, who died from influenzal pneumonia ten months after decidedly beneficial operation, the pericardial sac was proved post mortem to be adherent to the heart. In Professor Wenckebach's case also, although

the diagnosis of adherent pericardium was made and the history warranted the diagnosis, costo-pericardial adhesions were not found and the sac was not opened. Nevertheless the result of allowing the hypertrophied heart more space to act in, and permitting it to gain that space through a non-resistant surface and not at the expense of the bone-bound thoracic contents, was decidedly beneficial. This is not the place to discuss the many interesting scientific questions which Brauer and Wenckebach raise in their papers, but I have mentioned the details given for this reason—namely, that Brauer's operation seems indicated, not merely in the comparatively rare cases of viscero-costo-pericardial adhesion, but also in the much commoner cases of hypermyosis of the heart with valvular lesion and without extraneous tethering.

The importance of a correct diagnosis, it appears to me, after reading Brauer's and Wenckebach's cases, is less as to whether we have actually to deal with adherent pericardium than as to whether we have to do with notable hypertrophy with or without dilatation, or with cases in which notable and persistent dilatation is the chief cause of a state which threatens the life of the patient. This is not always an easy matter to determine. For systolic recession of the interspaces may often be observed with a bulky heart which is untethered and which, from its very enlargement, is comparatively fixed in its extended area.

Thus, I had under my care last year at the Children's Hospital, Paddington Green, the case of a girl, 14 years of age, whose large, distressed heart with paradoxical pulse I regarded as one of adherent pericardium, but who improved so much under ordinary cardiac treatment as to render this supposition doubtful. She was indeed quite convalescent, but unfortunately contracted typhoid fever of a severe type and went through it for a month. At the end of that time she died exhausted but without notable retrograde stasis of the circulation, and at the necropsy her heart was found to be quite without hampering adhesions, and while hypertrophied and dilated not excessively so. It was a case of mitral stenosis. Even, however, should erroneous diagnosis in some cases lead to the operation of cardiolysis, as Brauer terms it, it is unlikely that the hypertrophied heart, judging from the results of the cases published, would be other than benefited by this procedure.

I must apologise, Sirs, for occupying so much of your space, but I consider the subject an important one, and it is one which has interested me for some ten years or so. I only blame myself for a conservative timidity which has prevented my putting these conclusions into practice sooner, and hope soon to have an opportunity of acting otherwise, in view of the results secured by Brauer and Wenckebach.

I am, Sirs, yours faithfully,

ALEXANDER MORISON.

Upper Berkeley-street, W., Jan. 26th, 1907.

TYPHUS FEVER IN TENERIFFE.

To the Editors of THE LANCET.

SIRS,—I have read with great interest the letter on this subject by Dr. W. H. Peile which appeared in THE LANCET of Jan. 26th. May I add the following? About a fortnight ago, whilst I was on board, the s.s. *Medic* called at the town of Santa Cruz, Teneriffe. She remained there 24 hours, but during that time no passengers were allowed to go ashore because of the existence of a few cases of typhus fever on the island. So far so good. The sanitary authorities of Santa Cruz, however, permitted dozens of semi-coloured hawkers to board the *Medic*. These hawkers, coloured, dirty, and repulsive, came aboard with fruit, silks, linens, &c. There is little doubt from what localities of Santa Cruz these people must have come—most probably from the fever-infested portions. Is this the usual way in which quarantine regulations are enforced?

I am, Sirs, yours faithfully,

Edinburgh, Jan. 28th, 1907. E. ARCHER-BROWN, M.B. Edin.

MEAT DIET AND THE TEETH.

To the Editors of THE LANCET.

SIRS,—In a letter on this subject published in THE LANCET of Jan. 26th Dr. Edmund Spriggs gives a candid criticism on some facts and opinions which I presented at a recent meeting of the Pathological Society, and which were reported in your issue of Dec. 29th, 1906. As some of the statements in this letter may have given your readers an erroneous impression both as to the facts and to the author's interpretation of them, perhaps you will kindly allow me to reply to his criticism.

Dr. Spriggs states that "in the specimens shown at the Pathological Society on Dec. 18th, 1906, a distinct difference was apparent between a tooth germ in the meat-fed and one in the bread-and-milk-fed animal. The section of the head of a meat-fed rat, thrown upon the screen in order to demonstrate the bone changes, showed a developing tooth which was not a normal one," &c. The first of these statements is correct; the second is entirely wrong, Dr. Spriggs having been led into error through an imperfect acquaintance with the fallacies involved in this department of histological work. As the point may be of some interest to future observers and can be more authoritatively dealt with by an expert, I have asked Mr. Gibbs to reply to Dr. Spriggs's comment on the histological appearances of the teeth.

My critic further writes: "At that meeting of the Pathological Society I suggested, as reported in THE LANCET of Dec. 29th, 1906, that Dr. Chalmers Watson was mistaken in ascribing many of the effects observed by him to a meat diet and that they were probably due to a deficiency of lime and other bases." In my reply to this criticism I pointed out that my communication was restricted in its scope to a demonstration of the structural changes which had followed the use of an excessive meat diet; it did not include the consideration of the causation of any of the changes observed. The experiments referred to by Dr. Spriggs in support of his contention that the deficiency of lime in the diet was the cause of the structural changes were well known to me, as were also other experimental data relevant to this subject. I had also considered the view that the deficiency of lime might be an important factor in the production of some of the changes but had refrained from forming any definite conclusion on this point, and, with all due deference to Dr. Spriggs's views, I am still of opinion that it is inadvisable to form any theory as to the causation of the structural changes until the investigation is more complete. I would like, however, to point out that the changes in the osseous system, which seem to have particularly attracted Dr. Spriggs's attention, are, in my opinion, among the least important of the structural changes demonstrated at my meeting.

The most important point in Dr. Spriggs's letter remains to be dealt with—viz., the statement: "Indeed, whether the results produced in rats are due to the want of lime and other bases or whether they are an expression of the failure of a naturally omnivorous animal to rapidly adapt itself to a purely flesh diet it is clear that they cannot be directly applied to the case of civilised man, who never in ordinary circumstances lives upon a diet of meat alone." This criticism raises an issue of very great interest and importance and with your permission I would like to answer it in some detail. Before doing so, however, I would like to feel assured that I correctly interpret Dr. Spriggs's position in regard to some facts relevant to the issue which were demonstrated at the meeting of the Pathological Society. Might I ask him whether there is, in his opinion, any essential difference between the histological appearances of the bones in the second generation of meat-fed rats and those of the bones of the infant aged 16 months, the child of a tuberculous subject who had been fed for a prolonged period prior to and during gestation on a diet containing a great excess of meat? Photographic reproductions of the actual slides shown at the meeting are given in a paper published in THE LANCET of Dec. 8th, 1906.

I am, Sirs, yours faithfully,

Edinburgh, Jan. 27th, 1907. CHALMERS WATSON.

To the Editors of THE LANCET.

SIRS,—In reply to the first part of Dr. E. I. Spriggs's letter in THE LANCET of Jan. 26th, p. 252, I must express my surprise that he should come to any conclusions as to the histology of a tissue merely from seeing thrown on a screen a photomicrogram of a low-power magnification of an object which he had never examined under the microscope itself. Dr. Spriggs is also possibly unaware of the very great difficulties that beset the histological investigation at the same time of such fully calcified tissues as enamel and dentine and of the soft tissues immediately in contact with them. Owing to very great numbers of sections having to be cut and examined the paraffin method was the only practicable

one, the result being that a certain proportion of sections, so far as the dental tissues were concerned, had to be discarded owing to the very obvious artifacts they showed. I have re-examined *microscopically* the sections, photographs of which Dr. Spriggs saw on the screen, and it may interest him to know that for the purposes of the investigation both of these sections were rejected for this reason. I might also point out that in investigating such a difficult subject one does not draw conclusions from a comparison of any two sections but from a comparison of a very large number.

The photo-micrograms shown by Dr. D. Chalmers Watson were not from any of the three rats I referred to as having hypoplasic teeth; and, as stated in a previous letter, neither Mr. G. W. Watson nor I was able to detect any sufficiently constant variations in the tissues, hard or soft, to warrant us in concluding that there were any essential histological differences between the teeth of meat-fed and of bread-and-milk-fed rats.

I am, Sirs, yours faithfully,

Edinburgh, Jan. 27th, 1907. J. H. GIBBS.

THE PROPHYLAXIS OF CANCER AS INDICATED BY THE PARASITIC THEORY.

To the Editors of THE LANCET.

SIRS,—No one can have followed the progress of cancer research in this and other countries without being impressed with the vast extent of the knowledge which has been acquired in recent years, and yet he must also be impressed by the present limitations of that knowledge and must feel how little progress has been made in the matter of actual dealing with the disease. In the course of this research certain facts relating to cancer seem to have come into special prominence of late. To the writer, as an outside observer, these seem to be the following: (1) the widespread and almost universal distribution of cancer; (2) the extraordinary powers of growth exhibited by the cancer cells within the body; (3) the great vitality exhibited by these cells without the body; and (4) the ever-increasing evidence that in a large proportion of cases of cancer infection is by direct inoculation from without.

These facts seem to throw some light on those portions of the life-history of cancer which hitherto have lain in obscurity. Of one part of that life-history we know something. We trace the primary growth presumably from a single cell. This by its rapid growth soon becomes a tumour containing thousands of cells, each of which when carried away by the lymph or blood may become a secondary growth. Thus by the end of life one cell has become a million, and then with the patient's death they once more pass out of our sight. These facts to which I have referred seem, however, to indicate that the life-history of cancer does not end with the life-history of its host, but that long persisting in the bodies of the dead they may in all probability withstand the forces which destroy those tissues and in some resistant spore-like form become by slow degrees disseminated through the soil, carried by worms or birds, or by the deep water channels and thus account for the far-reaching distribution of the disease, its universality, and its widespread incidence. If this be so, it bears some analogy to the dissemination of tubercle bacilli, with their wide distribution in nature, their great resistant powers during extra-corporeal life, their somewhat difficult "adhesion" to the human host, and their powers of growth when once they gain access to that host.

In the present argument the cancer cell is regarded as the infecting agent. This is generally admitted to be the case when dissemination takes place within the body and the effect of radical operation strongly supports this view. Evidence has been brought forward to show the extraordinary powers of resistance to chemical agents, cold, &c., of those cancer cells outside the body and the history of cancer-infected mice cages and of cancer houses is also in favour of their vitality being long maintained under such conditions. The primary incidence of cancer, so rarely on the lungs, but so commonly on external surfaces and on the alimentary tract at points of lowered vitality, or, again, at similar points where the blood stream might carry the virus, seems to indicate an infection by some relatively heavy organism, such as a cell, which is very widely distributed in nature, and which may, though with difficulty, be inoculated from food, clothing, or other means of contact, but which is hardly ever air-borne. The difficulty of inoculation bears resemblance to that of tubercle, only is much more marked. Once established, however, the powers of growth in the human body are far greater, but the tissue reaction excited is much less, this, again, being in favour of an infection due to some cellular organism closely resembling the body cells rather than to any extraneous micro-organism.

Finally, the contrast between the growth and multiplication of these cells within and without the body is most remarkable. Within we can trace the development from a single cell of the millions of cells represented by the secondary growths of "general dissemination." Without, while we have much evidence of the maintained vitality of the cancer cells, we know of no conditions under which they may continue to grow or to multiply. In the human subject we recognise that the virulence and infectivity of cancer vary in direct ratio to the rapidity of cell growth—in other words, to the number of cells. Is it not, therefore, reasonable to suggest that the widespread distribution of cancer is due to those myriads of cells committed to the soil with every patient dying from cancer, which subsequently by slow degrees become disseminated throughout nature?

Turning now to the question of the treatment of cancer, we feel that so far little progress has been made. No specific has yet been found and no antiserum has been obtained. Vaccine treatment in the case of mice seems to have given some result, but the difficulties of applying any such treatment to the human subject can readily be imagined and we still remain with only one cure—namely, early and complete excision. In recent years medical science has been increasingly occupied with the prevention rather than with the cure of disease. In the case of tubercle the importance of this is being more and more realised, as we see in the active crusade against the dissemination of tuberculous sputa and the efforts at isolation of advanced cases. No effort, however, seems to have been made to deal with that large source of tubercle bacilli which is found in the dead bodies of tuberculous patients which probably contributes largely to the distribution of the bacilli in nature. This may be of importance in tubercle, but from the arguments above brought forward is far more likely to be so in the case of cancer. Hence the writer would put forward a strong plea for an attempt at the prophylaxis of cancer, a goal which should not be unattainable if the above suppositions are correct. Granted this, the prophylaxis should be relatively easy, for in this case the great source of infection must be the bodies full of secondary growth which are committed to the soil at death, while other sources, such as cancerous discharges and infected excreta, are comparatively unimportant and easily dealt with.

The cancer cells are readily destroyed by heat, and thus if cremation of all those dying from cancer can be legally enforced the great source of the disease will be eliminated, and it is not unreasonable to hope that by such methods a gradual diminution in the frequency of the disease or even its ultimate eradication may be attained. The writer can lay no claim to any share in the work of cancer research which has been carried on with so much ability and perseverance, but having followed its progress with the deepest interest he ventures to bring forward these suggestions which have been prompted by the work of others.

I am, Sirs, yours faithfully,

H. V. WENHAM.

St. Bartholomew's Hospital, E.C., Jan. 23rd, 1907.

ELECTRIC LIGHT IN MARYLEBONE.

To the Editors of THE LANCET.

SIRS,—Your reference to the failure of the electric light in Marylebone within the past few weeks and your warning to surgeons undertaking to perform operations with the aid of artificial light within the limits of the borough to provide against the recurrence of such a contingency is extremely opportune. However, the statement that while such events are unusual in other parts of London they have been frequent in Marylebone since the council undertook the lighting is more open to question. As a user of electric light, both under the old régime and since it has been taken over by the borough, I am in a position to say which is the greater sinner. It used to be a matter of frequent and almost weekly occurrence. Indeed, the failures were so frequent that a deputation of medical practitioners waited upon the council and asked them to take some action to put an end to

or mitigate what was described as a nuisance and a positive danger. One eminent surgeon went on to describe how a day or so previously, while he was performing a serious operation on a child, the light had suddenly gone out and how he had grasped the severed end of an artery between finger and thumb while with the other hand he groped for his waistcoat-pocket for a wax vesta to give some light while candles were being procured.

It was this that largely influenced me as a member of the borough council in supporting the proposal that the municipal authorities should take over the electric lighting of the borough. I am not defending them; they may have acted unwisely in the matter, but it is as well to remember that great pressure was brought to bear on them at the time by a large and important section of the consumers, including the surgeons in the district.

I am, Sirs, yours faithfully,

Thayer-street, Manchester-square, W. M. C. WALSHE.

AMYL NITRITE IN HÆMOPTYSIS.

To the Editors of THE LANCET.

SIRS,—Permit me to make a final reply to the last communication of Dr. Francis Hare in THE LANCET of Jan. 19th. I have not been guided by preconceived theories but by clinical facts respecting the hæmostatic action of amyl nitrite and references in the literature to such facts were cited in my last letter. Dr. Hare expresses correctly my theory of action of the drug in question. The fact that the drug is equally efficacious whether given intravenously, by the mouth, or by inhalation is no evidence in contravention of my theory. Chloroform whether administered by inhalation or through other portals is capable of exercising its narcotic properties, and like amyl nitrite may excite profound reflex phenomena by virtue of its local irritant action on the nasal mucosa. Such phenomena range from coughing to cardiac inhibition. Because the hæmorrhage following the removal of parovarian cysts and that of ectopic gestation is controlled by amyl nitrite is no evidence in refutation of my theory until it has been demonstrated that in the structures implicated there are no muscular fibres. Finally, respecting the vaso-motor hypothesis advocated by Dr. Hare in explanation of the mechanism of the asthmatic paroxysm, if the hypothesis in question were correct, then amyl nitrite would in its action fulfil the requirements of the old principle—viz., "*Naturam morborum ostendunt curationes.*" The fact is that amyl nitrite is rarely efficacious, even temporarily so, in inhibiting a paroxysm, and I believe that anyone who has used it for this purpose will substantiate my statement. The failure of action is evident. In asthma, as I have shown elsewhere, the longitudinal fibres of the bronchial musculature are enfeebled; hence the action of amyl nitrite is correspondingly diminished. In hæmoptysis the action of the drug is more forcibly expressed, insomuch as we assume that the muscular tonicity of the bronchial musculature is not compromised.

I am, Sirs, yours faithfully,

Paris, Jan. 22nd, 1907. DR. ALBERT ABRAMS.

THE TREATMENT OF CICATRICES.

To the Editors of THE LANCET.

SIRS,—I fear we do not give the attention to this subject that it deserves, both from the annoyance and disability occasioned by scars, especially adherent ones, and the great relief that may be afforded by suitable treatment. I thought these facts were pretty well understood, but two recent cases, both treated at large hospitals here, suggest that one may venture to draw attention to the subject again. In the first case a dock labourer had suffered an extensive laceration of the outer side of the leg and healing had left a scar two or three inches across. The scar was very thin, of a glazed surface, a bright red in colour, and so adherent to the underlying fascia that the patient was unable to follow his occupation owing to pain and lameness on movement. I introduced a tenotome beneath the skin and separated the cicatrix from the fascia beneath it completely, leaving no wound but the puncture of the tenotome. The man was kept up and by walking about and gentle movements of the skin further adhesions were prevented. He was soon able to resume work and the bright glazed skin became almost normal in appearance, though I confess that owing to the size of the cicatrix I feared sloughing would occur.

In another case a man had had the superficial flexor tendons of the forearm divided and the cicatrix in the skin covering the wound became adherent to the tendons and fascia over an extent of some three inches. He was unable to bend his fingers in the slightest degree on his discharge from hospital. He then presented himself at another of our largest hospitals and was subjected to prolonged treatment, so he says, by elaborate mechanical appliances. Being still unable to flex his fingers and his hand being entirely useless he came to the Bootle Borough Hospital and begged that the hand might be amputated, so that he might replace it with a more useful hook. I declined to oblige him but separated the scar subcutaneously from the tendons beneath it. This, with a subsequent freeing of fresh adhesions by my house surgeon, has enabled him to flex his fingers to such an extent that he is able to get a slight grasp with them, powerful as far as it goes, and to do his work.

I have drawn attention to these cases because they had both been under hospital treatment and had both been discharged suffering from serious disability that was readily overcome. It appears as though we were neglecting some old teaching on the treatment of cicatrices. We should do well to remember how much can be done for these cases and where unsightliness is the only difficulty how astonishingly the damaged skin may regain a normal appearance when separated from adhesions that strangle, rather than develop, its blood-supply.—I am, Sirs, yours faithfully,

Liverpool, Jan. 21st, 1907. GEORGE A. HAWKINS-AMBLER.

SPIROGRAPHS OR NASAL "BREATH PICTURES."

To the Editors of THE LANCET.

SIRS,—Under the above heading Dr. Wyatt Wingrave in his letter in THE LANCET of Jan. 26th, p. 253, described a spirograph made of vulcanite designed to test the degree of actual or relative nasal patency. Aqueous vapour exhaled through the nostrils is condensed on the cool surface of the vulcanite and a fleeting "breath picture" thus obtained, which may be temporarily fixed by lightly powdering the surface with calcined magnesia or fine starch.

It may be of interest to describe the pneumodograph, designed by Courtade of Paris, by means of which he obtains *permanent* records of the degree of respiratory nasal sufficiency. The instrument consists essentially of two plates of glass, graduated in squares, fixed at right angles to each other, T, by means of detachable catches. One plate of the pneumodograph is held horizontally against the upper lip a short distance below the nostrils, consequently the other plate hangs vertically downwards a few inches in front of the mouth. The patient is asked to breathe several times in the manner habitual to him. Condensation of aqueous vapour on the horizontal plate records the degree of nasal patency and a similar condensation on the vertical plate indicates the presence and degree of buccal respiration. Taken in connexion with one another the two spirographs may be used as a practical test of nasal respiratory sufficiency in any particular case, which is often a more useful factor than the degree of nasal patency alone. Permanent records are readily made by pressing sheets of paper specially impregnated with safranin on the surface of the glass plates, the pink colouring matter being liberated by the condensed aqueous vapour. Courtade's pneumodograph is made by Collin of Paris and can be obtained in London through Messrs. Mayer and Meltzer.

I am, Sirs, yours faithfully,

Birkdale, Jan. 28th, 1907. ALFRED ERNEST BURROUGHS.

THE ACTION OF POTABLE SPIRITS ON METAL.

To the Editors of THE LANCET.

SIRS,—In THE LANCET of Dec. 29th last, p. 1821, I observe you have a note on brandy being contaminated with copper. Might I be permitted to mention that I had a flask with whisky sent me by a sportsman some years ago? The flask had been filled and was daily carried to the moor, but no occasion had arisen for using the contents for over two weeks, and when the valet was in the act of filling a glass the colour was observed to have changed and had become turbid and dark. The gentleman would not

allow his valet to pour out more, and ordered him to take it to me to see if I could explain the cause. A few simple tests soon told it was contaminated with copper. I observed the flask, which was made of copper, had been once "tinned" inside and silver-plated outside. The tin coating had all been eaten away and the copper walls could be easily seen. I advised the gentleman to procure a glass flask in future and he would be saved a like experience.

I am, Sirs, yours faithfully,

Braemar, Jan. 28th, 1907 A. R. CLARK.

ADVERTISEMENT BY POST.

To the Editors of THE LANCET.

SIRS,—As an appendix to the history of the year which has just closed it may interest your readers to have placed upon record the number of advertisements the writer has received through the post during the last four years.

His name first appeared in the Medical Register and in Churchill's "Medical Directory" in 1903. The address given was just beyond the four-mile radius in the North-Eastern postal district of the metropolis—that is, it appeared to be that of an ordinary general practitioner and not of "a consultant." From the first it was decided to note down in a diary the actual number and the cost of the postage of the advertisements by post which were received during the year, for an early assurance was given (by post) that "a letter or post-card is the cheapest and most reliable traveller" and that "a halfpenny stamp is the best advertiser." The personal calls of agents, travellers, canvassers, and touts were not recorded. On very few occasions were proffered samples applied for. In each year August was the month when the fewest communications were received—namely, on an average, a dozen. The largest number was received at varying periods, thus: in 1903, December, with 30; in 1904, October, with 44; in 1905, May, with 46; and in 1906, March, with 52.

A rough classification of the nature of the advertisements was made; a few examples are appended. As was to be expected the very large majority referred to proprietary preparations, drugs, special food-stuffs, papers, medical publishers' circulars, catalogues, and price lists. Several of these were repeated monthly—this recurrent insistence and persistence was not confined to American advertisers. Very few peculiarly local advertisements were received and practically no begging letters. The fair fame of the record was tarnished for the first time during the very last week when a lottery prospectus was received despatched from Copenhagen. This year four technical diaries came to hand.

The following is a statistical summary:—

—	1903	1904	1905	1906
Total advertisements received through the post	248	310	371	390
Spirits, wines, and tobaccos	19	10	20	37
Insurance societies' prospectus ...	17	13	20	11
Samples (uninvited)	16	22	13	9
Nursing homes and retreats	12	14	15	14
Moneylenders	4	12	10	7

The figures for 1903 are abnormal as the register of names published in 1902 probably was used by advertisers in the early part of the following year. In addition to the figures given above for 1906 the following may be quoted: drugs, foods, &c., 150; papers and price lists, 74; mineral waters, spas, &c., 13 (chiefly in April); instruments, appliances, and other goods, 44.

The cost of postage was recorded during the last three years. The cost of the carriage of samples is not included and a few stamps from Italy, Switzerland, and Denmark are omitted:—In 1904: £1 3*s.* 0½*d.*; 48 cents; 55 centimes; 30 pfennigs. 1905: £1 0*s.* 10½*d.*; 40 cents; 95 centimes; 30 pfennigs. 1906: £1 0*s.* 6*d.*; 40 cents; 80 centimes; 50 pfennigs. This means that the revenue from such postages was about 25*s.* in the case of each medical practitioner to whom these advertisements were sent—a not inconsiderable sum when it is remembered that about 20,000 medical practitioners are registered as living in the British Isles. In the writer's experience, to have one's name in the Law List induces very few advertisers to use the post office service for a similar purpose to that detailed above.

I am, Sirs, yours faithfully,

STANLEY B. ATKINSON.

Cawley-road, N.E., Jan. 31st, 1906.

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

Slaughter of the Innocents.

THE frequent references to the mortality in young children from burning will perhaps be thought wearisome, but the cruelty of the death is so grievous and the loss to the nation is in the aggregate so great, that the question may well be asked again, Can nothing be done to check it? The city coroner, Dr. E. A. Gibson, made some strong remarks on it yesterday, when three cases of fatal burning had to be inquired into. Last week there were four, and there have been 14 since the beginning of the month. In addition "there are eight cases in the Manchester Infirmary practically at the point of death suffering from burns." Yesterday also an inquest was held on a child aged four years who was burnt to death at Warrington. The coroner, Mr. Brighouse, said that he had held 20 similar inquests since Nov. 6th. He remarked: "Material wealth was very well, but the wealth of the nation consisted in keeping its children alive." Oldham has added several cases of fatal burning to the total during the past few weeks and yesterday three more were notified to the borough coroner. Another case is reported from near Wigan, where a child aged 11 months was placed in a cradle before the bedroom fire and too near it. And yesterday also the Bury coroner received the report of the death of a girl aged ten years in the Bury Infirmary. On the previous Saturday morning she and a young brother were in the house alone. He fell off a stool in front of the fire, and in picking him up her flannelette skirts caught fire and she was fatally burnt. But danger is not confined to fire alone, for the same catalogue of slaughter includes the case of the young daughter of a labourer at Bradwell who was playing near the fire, her mother being absent, when a pan of boiling water fell on her and she was terribly scalded. This is a serious and shameful record, not standing alone, but one that might be repeated many times over from the country at large, yet, as Mr. Brighouse said, "so far the legislature was unmoved by the appeals of coroners and the Prevention of Cruelty Society." Dr. Gibson fears that the public do not realise the gravity of the question or something more would be done. There seems to be an agreement among coroners that the absence of fireguards is a frequent cause of these so-called accidents and they would have their use made compulsory. As Dr. Gibson says, "parents might be punished for not taking proper precautions to protect their children from fire, and ..... people might be prevented from clothing their children in inflammable garments, particularly flannelette," which is especially dangerous in its ordinary state, though there are some varieties of it where the danger is greatly lessened. But the mothers look at the price of the material and prefer the cheap and dangerous to the safer if the latter is a fraction higher in price. As the laudable effort made by the Mayor of Huddersfield, followed, as it has been and seems likely to be, in other places, has been successful in largely reducing the infantile death-rate, something of the kind might be tried in order to save the children from death by burning. The plan does not appeal to the higher motives, but though it rests on the love of money rather than on the love of their offspring, the result is that the mothers take more care of their children than they did. It pays to keep them alive and a similar plan might serve the children as an insurance against fire.

Overlying.

Three cases of children being found dead in bed were inquired into by the city coroner a few days ago. In one case the mother said that the child was "apparently all right" when she went to bed early on Sunday morning, but later she had found it dead on her arm. She had had 15 children, of whom five died while babies. Inquests were held on two of them who were about a month old. The jury returned an open verdict on account of these inquests having been held, but the coroner said that it would facilitate matters

if they would say whether death was due to suffocation or to convulsions, so the jury later returned a verdict of death from convulsions due to natural causes. How the verdict was arrived at is not mentioned, but perhaps they as well as the coroner thought matters should be facilitated. It is not improbable that if the mothers were sufficiently bribed there would be fewer cases of "overlying."

Ptomaine Poisoning at Wigan.

There have been considerable excitement and anxiety lately at Wigan on account of a sudden outbreak of sickness. It appears that 30 or 40 people were taken ill on one day and many more since, so that about 100 people have suffered. Meat bought at one particular shop is suspected. Analyses and bacteriological investigations are being carried out, but no authoritative statement has been made as to the cause of the outbreak, though it is generally attributed to ptomaine poisoning.

Bad Meat: Butchers sent to Prison.

A serious case of having in possession diseased meat for sale came before Mr. Yates, K.C., the stipendiary magistrate, at the county police court on Jan. 21st. Three butchers, two of Gorton and one of Ardwick, were summoned for being "in possession of meat deposited for sale and unfit for food." Dr. A. W. Martin, medical officer of health of Gorton, stated that he inspected the meat with Mr. Ingram, veterinary surgeon, and the right hind- and fore-quarters of a beast were condemned and removed. When Longden, one of the Gorton butchers, was asked by Mr. Holburn, chief veterinary surgeon to the Manchester corporation, for the other quarters he said that he had not got them and that he bought the meat from a man on the road. The quantity destroyed was 6¾ hundredweights. Dr. Martin said that the meat was dropsical, of an unhealthy pale red colour, and there was extensive general tuberculosis. This meat had not been to the corporation abattoirs where it would have been seen. It seems that this man Longden is a "slink butcher" in rather an extensive way, for the sanitary inspector to the Bucklow district council, Cheshire, found at the quiet village of Mobberley a building used as an unlicensed slaughter-house by Longden in which were four sides of beasts which were destroyed as unfit for food. The position of this man seems to be well known, one of the police sergeants saying that he did an extensive business in the district. This does not speak well for the farmers who have dealings with him. Mr. Yates characterised the case as a very bad one which a fine would not meet. The chief offender was sent to prison for three months, the second defendant, a brother, for one month, and the third man, against whom there was no evidence that he had dressed the meat, was discharged. It is satisfactory that at last a case has been followed up and that the offenders have gone to prison instead of merely paying a trifling fine.

Cotton Districts Convalescent Fund.

It seems a far cry to the days of the American Civil War and the cotton famine resulting from it that caused such widespread distress through the manufacturing districts of Lancashire. But a meeting of the governors of the Cotton Districts Convalescent Fund held on Jan. 25th reminds us of what was not only a gigantic and most beneficent scheme, but one which was carried through with enduring energy and devoted patience. Many of the chief actors are gone but some remain, among whom is Earl Egerton of Tatton, whose resignation of the chairmanship of the board was received with much regret. The Earl of Derby was elected chairman for 1907. When the cotton famine was over the funds remaining were devoted in great part to the convalescent hospitals of Southport and Buxton, and an active interest is taken in those institutions. During the past year 2933 patients were sent to these hospitals at a cost of £5219, against 2896 sent at a cost of £5506 in the previous year.

Jan. 29th.

LEEDS.

(FROM OUR OWN CORRESPONDENT.)

Appointments at the General Infirmary.

AT a meeting of the governors specially summoned for the purpose Mr. W. H. Brown, who recently resigned his position as surgeon to the institution, was elected an honorary consulting surgeon. This position entitles the holder of it to the use of six beds in the infirmary and is one which falls without special election to those who have served the institution as members of the full staff for a period of 20 years, or who while acting in that capacity have attained the age of 60 years. As Mr. Brown's resignation was determined by ill-health it required a special meeting of the governors to entitle him to his new post, and that they have carried out the recommendation of the board in making the election is a source of pleasure to his colleagues who may confidently hope that his health will improve with his relief from the more strenuous of his infirmary duties. Mr. Joseph F. Dobson was on the same day elected honorary assistant surgeon to the infirmary. His appointment will cause a vacancy in the position of honorary assistant surgeon in charge of the two semi-convalescent hospitals which he has held for about two years. At a meeting of the faculty the following resident appointments were made: Mr. J. B. F. Wilson was appointed house physician to Dr. T. W. Griffith, Dr. M. G. L. Walker, house surgeon to Mr. E. Ward, and Dr. F. G. Dobson to Mr. R. L. Knaggs.

Appointments at the University.

Some time ago the increase in the amount of bacteriological work, which was carried out at the medical school on behalf of the various county councils, necessitated the appointment of an additional demonstrator most of whose work was in that department. Dr. R. D. Smedley who held the position having been appointed demonstrator of pathology and bacteriology in the University of Sheffield, the council has appointed Dr. Myer Coplans as his successor, who has begun his duties as demonstrator of bacteriology. The council has also appointed Dr. Charles Porter as honorary demonstrator of public health. Dr. Porter holds the position of assistant medical officer of health of the city of Leeds. Dr. J. S. Cameron is, of course, professor of public health in the University, as well as medical officer of health of the city. The easy coördination of work which arises from this enables great facilities to be put in the way of medical students or those attending classes for the Diploma of Public Health for the study of matters dealing with municipal sanitation.

Meeting of Sanitary Inspectors.

Under the chairmanship of Mr. T. Pridgin Teale, the President, an interesting meeting of the north-eastern centre of the Sanitary Inspectors' Association has lately been held in Leeds. Mr. F. S. Sharp read an instructive paper on Ancient and Modern Methods of Constructing and Testing Drains. He laid it down as an important principle that drains should be of the smallest diameter that was consistent with the amount of work which they had to do and to secure thorough scouring there should be a proper fall. He was a warm advocate of the water-test for drains in all cases where it could be carried out thoroughly. The President referred to times well within his recollection when the system of drainage in Leeds involved the lifting up of a flag in the cellar kitchen and the removal of black sludge in buckets. The drains were of the old-fashioned brick-built character. He referred to the recent excavations in Crete, where in what was taken to be the Palace of Minos terra-cotta pipes with flanges were found, which seemed to indicate that the water-carriage system had been employed so long as 4000 years ago and that sanitary matters were in this respect in a more advanced condition than they were at Windsor Castle at the beginning of the last century. Mr. Teale also said he was glad to learn that the building clauses committee and the sanitary committee of Leeds now worked in harmony and that their work was coördinated. The writer of this paragraph has some experience of the former state of affairs and the result of this was that in his house a soil pipe of some three and a half inches diameter was fitted into a drain pipe of six inches instead of into one of four or four and a half inches in diameter with, as a consequence, a joint which was imperfect.

Overcrowding at the Workhouse.

During the last 20 years the amount of pauperism in the Leeds union has steadily increased. In 1887 the returns showed that on Jan. 1st the total number of inmates of the workhouse and of the infirmary attached thereto was 874—383 in the former and 491 in the latter. The numbers for Jan. 1st of the present year are respectively 832 and 838, a total of 1670, an increase of nearly 100 per cent., and an increase out of all proportion, of course, to that of the population. There are

about three times as many men as women in the institutions, but it is satisfactory to note that the number of children coming under the care of the guardians is diminishing. The pressure on the accommodation is so great that as a temporary expedient the guardians have taken on lease a large factory in the neighbourhood of the workhouse in which they intend to provide accommodation for some 250 paupers. The absolute necessity for this is shown by the fact that there are at present 818 inmates in the workhouse alone, which is 311 above the number which it is officially certified to accommodate.

Jan. 28th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Ayr District Asylum.

Dr. C. C. Easterbrook, the medical superintendent of this asylum, makes in his annual report some comments on insanity which are of more than local interest. He discusses very fairly the question as to the increase of insanity in Scotland. He deducts from the number of total admissions patients who had been in the asylum previously; also patients who had been transferred from other institutions or from their own homes who had formerly been certified. In this way a total admission of 137 is reduced to 110. Of the 110 admissions 27 had suffered from one or more previous attacks for which they had been certified but from which they had recovered. The remaining 83 persons represented those who had been certified as insane and placed under control for the first time. This bears out the statement of the central lunacy authorities that the number of persons placed on the register of the insane for the first time in their lives is year by year not increasing to a greater extent than can be accounted for by the increase of population. Under the causes and kinds of insanity stress is laid on the observation that in no instance could there be excluded, prior to the actual attack of insanity, the existence of a morbidly reacting brain in the patient, the outcome of faulty inheritance, or of faulty modes of living, or of previous disease experiences, or of these combined. Specially important was the evidence afforded by the temperaments of the patients; thus it was often found that persons who had become insane had been known as "queer," or "funny," or "peculiar," and Dr. Easterbrook accentuates the necessity of recognising these and other manifestations as indications of a temperament which supplies a soil favourable to the cultivation of insanity. He holds that persons with such abnormal reactiveness might be wholly or largely prevented by intelligent observation and careful upbringing from becoming insane. Such persons being potential subjects for psychoses or neuroses must so far as is within their power avoid all causes which will tend to throw an undue stress on their nervous system, and must live more quietly and more carefully than their fellows if they would avoid a breakdown. He also does not share the view that insanity is to be looked on as a toxæmia; he evidently looks more at the constitutional factor as providing the favourable conditions for the action of the toxin. It is further to be noted that all new cases are admitted to, and kept under treatment in, the hospital department where rest and fresh air as well as medicinal treatment are much relied on for their curative influence.

Infirmaries and the Working Man.

In the *Glasgow Herald* of Jan. 28th a very interesting article contributed by a special correspondent appears on the duty of the working man towards the upkeep of the infirmaries in Glasgow. With reference to the £300,000 still required for the rebuilding of the Royal Infirmary, it is suggested that the managers need not look to the present body of annual subscribers or to the middle class as a whole, but that this burden should be undertaken by the working classes. The first argument brought forward is that the middle classes have already contributed to the Glasgow infirmaries far more than their share for building, endowment, and current expenses. Again, the working classes are liable to forget that the general hospitals exist almost exclusively for them, their families, and dependents. The writer goes on to prove that the working man is able to do much more in this direction than he has hitherto done. Quoting from the last report of the Chief Registrar of Friendly Societies, it appears that the accumulated funds on Dec. 31st, 1905, of the working classes in their several building societies, friendly societies, coöperative societies, trade unions, and other similar thrift societies, and the Post-Office Savings Banks were £402,256,600, a capital fund reported to be increasing at the rate of £14,000,000 per annum. If it be allowed that one-half of the amount in the Post Office Savings Banks, or £82,800,000, belongs to the middle class, the invested funds amount to £319,456,600, of which Scotland's share (based on population) would be £31,000,000, yielding an income of not less than £1,000,000. Thus no great drain upon the invested capital would be made should the £300,000 still needed for the Royal Infirmary be taken from it and the amount could easily be spread over four years. Finally, it is pointed out that the purely sectional legislation of the last session of Parliament, as indicated in the Trades Disputes Act, the extension of the Workmen's Compensation Act, and the Free Meals for School Children Act, all of which were promoted directly by the Labour Party and cast heavy burdens on the middle-class community, is being answered by a feeling that upon emergency the working classes must be left to find more for themselves.

Jan. 29th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Royal College of Surgeons in Ireland.

THE annual dinner of the Royal College of Surgeons in Ireland took place on Jan. 26th, when the Lord Lieutenant was present and delivered an interesting speech in which, however, he did not commit himself to any party political opinions. He expressed his admiration of the outgoing Chief Secretary, Mr. Bryce. The Attorney-General also spoke of the high qualities of Mr. Bryce and his regret that he was obliged to leave Ireland after such a short term of service. General Lord Grenfell said that he should like to say a word about the Army Medical Department and to express his gratitude to those physicians and surgeons who had given such assistance to it by their advice and example. Before the dinner the honorary Fellowship of the College was formally conferred on Mr. J. Priestley Smith, professor of ophthalmology in the University of Birmingham. It will be remembered that the present President of the College, Mr. H. R. Swanzy, is himself a distinguished ophthalmologist and author.

Cerebro-spinal Meningitis in Belfast.

Four children in one family having succumbed to a toxæmia in the course of 24 hours, an inquest was opened at which Professor W. St.Clair Symmers made a provisional diagnosis of cerebro-spinal meningitis. Other cases have since been reported and considerable apprehension is felt in the city. To-day (Wednesday) 29 cases are reported with fatal issue in 17 of them. There is fear in Dublin lest the epidemic should visit the capital and increase its present very high death-rate. No cases have been reported there, however, and there have been none in Dublin since 1900.

The Consumption Problem in Belfast.

At the last meeting of the public health committee the chairman gave an outline of a projected preventive scheme, when the Lord Mayor (the Earl of Shaftesbury) urged that it was a most important question and hoped it would come before the council at an early date on the recommendation of the committee. A special meeting of the public health committee is to be held with a view of preparing a recommendation to the corporation on the question.

The Irish University Question.

On Jan. 25th Mr. Bryce, M.P., who was then still Chief Secretary for Ireland, delivered a most important speech in which he outlined the scheme which the Government proposes to bring forward for dealing with the problem of university education in Ireland. Practically Mr. Bryce accepts the recommendation of the Lord Chief Baron and four other Commissioners, as contained in Note 2 to the report of the Trinity College Commission. He proposes to make Dublin University the natural parent university for the whole country, and that Trinity College, Dublin, Queen's College, Belfast, Queen's College, Cork, and a new college in Dublin shall be the constituent colleges of the University. The new national university and the new

Dublin college for Catholics are to be undenominational in their constitution. The scheme, which seems on paper a bold and broad-minded one, has on the whole been received favourably, but, of course, everything will depend on the details, such as the functions and powers of the Senate and the amount of autonomy enjoyed by the federated colleges.

The Cork Sanatorium Project.

The Cork sanatorium board decided on selecting a site at a place called Myshall, about 12 miles from Cork. The Tullip river, which is a tributary of the Lee, runs through the grounds. One of the city medical men wrote to the newspapers pointing out that the Cork water-supply is derived from the Lee and that if the patients at the sanatorium carelessly expectorated into the river there would be danger that consumption would be spread among the citizens. Professor E. J. McWeeney, bacteriologist, Dublin, wrote in reply, practically asserting that there would be no such danger. The corporation became alarmed and appeared by counsel at the Local Government Board inquiry held last week. The proceedings extended over four days and attracted considerable attention. Dr. C. Theodore Williams of London gave evidence expressing general approval of the site. Mr. Fairley, engineer, of London, described the methods which it was proposed to adopt for the disposal of the sewage and said that the effluent might be safely discharged into the Tullip river. Professor McWeeney, in his evidence, stated there was no danger to be apprehended from the sewage. He did not think there was much chance of the citizens of Cork being injuriously affected by the patients expectorating into the river. In the course of cross-examination he stated that tubercle bacilli can live in river water, but not for an unlimited time, and that it would be highly dangerous to drink a tumbler of water into which a consumptive patient had expectorated. Dr. A. E. Moore, lecturer on bacteriology at the Queen's College, Cork, in the course of his examination said he disapproved of the effluent being conveyed into the river and pointed out how the arrangements for purifying the sewage might break down with the result that intestinal tubercle bacilli could find their way into the river. He considered the fact of the patients expectorating into the river would be a distinct source of danger. Dr. A. R. Parsons of Dublin, visiting physician to the Newcastle Sanatorium, and Mr. F. K. Edinger, superintendent of Cotswold Sanatorium, considered the site unsuitable for a sanatorium. Amongst other witnesses examined were three Cork medical men and two of the Cork engineers. The value of sanatorium treatment was discussed. There was a very strong bar and from a scientific point of view the proceedings were extremely interesting. The decision of the Local Government Board is awaited with some apprehension and the citizens, apart entirely from the question of danger, regard with repugnance the idea of establishing a consumptive sanatorium on the bank of a river which provides their water-supply. It is believed that if the decision of the Local Government Board should be in favour of the Myshall site the Cork corporation will appeal to a higher tribunal.

Jan. 30th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Treatment of Pre-Sclerosis.

M. Huchard made a communication upon the above subject to the Academy of Medicine on Jan. 15th, and the occasion was notable not only on account of the importance of the subject and the position of the reader of the paper but also because it gave rise to a most intere-ting discussion among those leaders of the French medical profession who have studied the subject. M. Huchard began by saying that by the name pre-sclerosis he meant the clinical period which is characterised by arterial hypertension more or less pronounced, without, however, any definite arterial lesion. Hypertension preceded vascular lesions and was not consecutive to them. It is caused above all by poisons derived from the digestive system which act upon the coats of the vessels, upon the medulla which is the regulator of the heart, and also upon the kidney, which the passage of these poisons irritates so that it becomes less permeable than it ought to be. Hypertension thus having come into existence the arteries take on a certain compensatory hypertrophy, as does every organ which is forced to do greater work than the normal. Arterial sclerosis is thus brought about which is extremely difficult to cure, although the stage of pre-sclerosis is very accessible to treatment. Among agents for lowering the arterial tension M. Huchard pointed out that the chief were the nitrites and the serum of milk or the lacto-serum of Biondel, massage, muscular exercises, carbonic acid baths, the "cure" carried out at Bourbon-Lancy, and the use of high-frequency currents, but these last, said M. Huchard, apparently only bring about a temporary improvement. Finally, the diet must be carefully attended to M. Lancereaux, M. Hayem, and M. Chantemesse could not altogether agree with M. Huchard's opinion upon the mechanism of the production of arterial sclerosis, for they considered that it was very often anterior to the hypertension. M. Huchard replied that if the arterial lesions existed at the commencement of the hypertension they were only extremely slight and impossible to diagnose in the living body. M. Albert Robin said that he was able to confirm on all points the researches of M. Huchard who, he considered, had brought about a veritable revolution in the treatment of morbus cordis and diseases of the blood-vessels, and the effects of these researches were much more widespread than was generally thought. Certain cases of dyspepsia, for instance, occasionally present crises of hypertension and the dyspepsia can only be cured by treating the hypertension. Moreover, added M. Robin, the question whether the arterial lesions are cause or effect matters very little. The essential point is that the treatment advocated by M. Huchard incontestably causes the disappearance of the hypertension, and with the disappearance of this the arterial sclerosis also disappears.

Hygiene and the Prevention of the Freezing of Drinking Water.

General Jourdy, the new Governor of Verdun, having in his inspection of barracks noticed that the standpipes were covered up with manure to prevent them from freezing, came to the conclusion that there was great danger of contamination of the water from this practice. He has therefore issued an order that only clean materials of vegetable or animal origin shall be used for the purpose, such as straw, sawdust, shavings, rags, or hair, which must previously to being used be conveyed to the hospital, there to be sterilised.

Wound of the Heart by a Foil; Suture; Recovery.

At a meeting of the Society of Surgery held on Jan. 9th M. Quénu, on behalf of M Baudet, read the account of the case of a man, aged 25 years, who was wounded in the fifth left intercostal space by a thrust with a foil. M. Baudet turned up a flap of the thoracic wall and found a small wound in the heart. This was sutured and the flap being replaced the wound was dressed without any drainage. At the end of 12 days the patient was well.

The Treatment of Tuberculosis by Marmorek's Serum.

At a meeting of the Academy of Medicine held on Jan. 15th M. Charles Monod gave an account of some researches which had been carried on since 1903 by various physicians, mainly in foreign countries, upon the treatment of tuberculosis by Marmorek's serum. It appeared from the results of the inquiry that the serum at any rate did no harm and that in many cases good had resulted from its use, especially in cases of surgical tuberculosis. The most favourable reports had been sent in by Lewin in pulmonary tuberculosis and by Hoffa and van Hueller in surgical tuberculosis.

Death of Professor Budin.

Professor Budin died on Jan. 22nd at Marseilles, succumbing to an attack of pneumonia contracted while visiting that town for a conference of the League against Infantile Mortality, of which body he was the president. He was born at Enancourt-le Sec (Oise) on Nov. 9th, 1846, and was therefore just over 60 years of age. In 1871 he became *interne des hôpitaux*, Paris, and nine years later *agrégé* to the Faculty of Medicine in the University. In 1886 he was elected to the Academy of Medicine, and in 1898 he succeeded his distinguished master, Professor Tarnier, as professor of clinical obstetrics in the University. His scientific, practical, and literary work has been very inclusive in the direction of midwifery and the care of the newly born. He completed Tarnier's classic "Traité des Accouchements," and in 1886 published an important

Handbook of Obstetrics embodying his personal experience. More recently he published a treatise upon midwifery in collaboration with his pupil, Dr. Demelin, and finally he wrote a most interesting book "The Nursling," in which may be found an account of his admirable and patient researches into the hygiene and treatment of infants. An English translation of this work has just appeared. Professor Budin was, with M. Strauss, the founder of the League against Infantile Mortality, and was the first to institute consultations for nurslings (*consultations de nourrissons*) in the hospitals. He has left behind him the reputation of an indefatigable, scrupulous, and patient worker, and an admirable professor of his science. His rectitude, the soundness of his teaching, and his deep sympathy with and tenderness towards his patients combined to make him one of the best respected and loved professors of his day.

Jan. 29th.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Medical Practice Abroad.

Dr. J. Schwalbe, the editor of the *Deutsche Medizinische Wochenschrift*, has recently drawn attention to the fact that medical practice abroad tends to become more and more difficult for German medical men in consequence of restrictions imposed by foreign legislation. In the United States of America, for instance, 20 years ago the majority of the States admitted foreign practitioners without an examination and almost without any formalities. At present, however, an examination is required nearly everywhere in America and a licence must be obtained. In the French part of the Riviera where formerly medical men of all countries resided, to the great advantage of foreign visitors, the strict application of the French law of 1892 has induced the foreign medical men to leave with the exception of a few who were there previously to the enactment of the law. Also in Italy the Santini party endeavour to deprive foreign practitioners of the right which they have hitherto had of practising among their countrymen. More than 100 German medical men residing in the Riviera would thus be obliged either to obtain Italian qualifications or to give up their practices. Dr. Schwalbe therefore proposes to mitigate these drawbacks by international treaties of reciprocity in which the states concerned would agree to a mutual recognition of diplomas. Similar conventions exist in certain Swiss cantons and between Italy and England. Moreover, Germany and some of its neighbouring countries also recognise the diplomas of medical men residing in frontier towns, but of course only for practice in the frontier districts. It has been argued that if such treaties were concluded foreign medical men would be induced to settle in Germany, but this argument is obviously erroneous. Apart from the difficulty of the language the overcrowding of the profession in Germany would certainly prevent foreign medical men from seeking their livelihood there. It would be only in some watering-places and health resorts frequented by foreign patients that foreign medical men would have a chance of prospering to the detriment of the German local practitioners, but this they are at the present time quite at liberty to attempt under existing legislation, provided always that they are careful not to assume a medical title by which patients may be induced to believe that they are duly qualified in Germany. The suggestion of Dr. Schwalbe that Germany should follow the example afforded by the arrangement already made between Italy and Great Britain is therefore very reasonable.

Insanity in the Russian Army during the Russo-Japanese War.

In the *Russische Medicinische Rundschau*, a medical journal in the German language, edited by Russian medical men and issued in Berlin, a paper by Dr. Borischpolski deals with the subject of insanity among the Russians engaged in the war with Japan. Dr. Borischpolski, who was attached to a military hospital at Harbin, blames the inadequacy of the preparations made by the Russian war department for the care of the sick and wounded soldiers. Owing to the absence of an effective system of organisation medical officers sent from Russia to the seat of war had to stay for months at Harbin or Chaborovsk without occupation. After the great battles five or six army medical officers had sometimes to attend 700 wounded, whilst a few miles further away there were numerous surgeons with little or nothing to do. The possibility of the occurrence of mental diseases was never considered, although numerous cases of insanity had been observed during the military operations in China. At the beginning of the war the insane were kept in the military hospitals among the other soldiers and were under the care of medical men without special knowledge of mental diseases. Insane officers were, for instance, placed in the syphilitic department of the hospital. In course of time the number of insane increased so much that in the summer of 1904 two houses were specially fitted up for them, one house for officers and the other for soldiers, where the patients were better attended and cared for than in the general hospitals. Until December, 1904, when the care of the insane was left to the Russian Red Cross Society, 111 officers and 289 soldiers were conveyed to the provisional lunatic asylum. As there was room only for 30 patients they had to be sent home very soon, whilst quiet cases were conveyed to other hospitals. Until December, 1904, there were 262 patients sent home in batches of 30 to 35 men. The patients travelled on the railway at first in ordinary passenger carriages but afterwards in carriages fitted up with bars and gratings for the conveyance of prisoners. The journey as far as Irkutsk, the capital of Siberia, required from three to four weeks. A statistical table shows that alcoholic psychoses and progressive paralysis were the more frequent mental diseases in the army; also traumatic psychosis, epilepsy, dementia, and hysteria were frequent among the lunatics.

The Congress of Internal Medicine.

The German Congress of Internal Medicine will meet this year at Wiesbaden, Professor von Leyden being in the chair. The official subject of discussion is the treatment of neuralgia and Professor Schultze of Bonn will read the introductory paper. Other subjects already announced are: Chronic Poisoning by Manganates, by Professor Jaksch of Prague; the Present State of Percussion of the Heart, by Professor Treupel of Frankfurt; and the Coronary Circulation and the Heart Muscle, by Dr. Hirsch and Dr. Spalteholz of Leipsic. The Congress will meet from April 15th to 18th.

Jan. 28th.

ITALY.

(FROM OUR OWN CORRESPONDENT.)

Foreign Medicines.

THE pharmaceutical interest outside Italy is directly struck at by an ordinance just issued from the Direzione Generale di Sanità prohibiting the introduction into the Italian kingdom of all medicines prepared in foreign countries. The motive of this measure is officially stated to be the "protection of public hygiene" and the "desire to obtain for our own products of a similar kind a more favoured treatment abroad." This prohibition, the ordinance hastens to add, is "not absolute but relative," since medicines of foreign preparation will be allowed to come into Italy if the Direzione di Sanità shall have previously been notified as to their composition. In terms of this proviso the Customs houses at the frontier will have the right to examine the medicine or medicines seeking a market in Italy. The result would seem to be that, having obtained from the Italian Government "il brevetto di privativa" (certificate of special privilege), the foreign pharmacist may be relieved of any further obligation to disclose the composition of his medicines if sold in Italy. In any case the preliminaries cannot but be vexatious, if not costly; indeed, the ordinance is of a piece with the attempt, so often renewed of late years, to deprive the non-Italian, particularly the English-speaking, practitioner of the right to exercise his profession in Italy unless provided with an Italian diploma.

Honours to Camillo Golgi.

On Jan. 23rd the Aula Magna of the University of Pavia was thronged with students, past and present, the academic authorities, the magistracy, communal and municipal, and representatives of the various civic interests to witness the bestowal on Professor Golgi of an illuminated parchment setting forth the congratulations of his pupils on his having been awarded the Nobel Prize for pathological research.

Signed by the students in other faculties besides the members of his class, the inscription runs as follows:—

Camillo Golgi—cuius nomen—ob mirabilia scientiae artisque medicae inventa atque incrementa—iampridem—summis laudibus honoribusque ubique concelebratum—nuperrime praemium nobilissimum—olim ab Alfreda Nobel scientiae ac merito propositum—decoravit, provexit adauxit—tanto viro—qui sic et ipsius et civitatis et patriae—famam ac decus sere perennius—coram omnibus nationibus confirmavit asseruitque—Athenei Ticinensis Alumni—uno animo una voce—gaudentes gratulantes—honoris memoriaeque causa—tabulam membranaceam arte depictam—magnae admirationis parvum documentum dicatam consecratamque—voluerunt.

[To Camillo Golgi, whose name, long celebrated universally with the highest praise and honour for the marvellous discoveries with which he has enriched the science and art of medicine, and which, quite recently, the prize offered by Alfred Nobel for scientific merit has adorned, promoted, and enhanced—to the distinguished man who, in the eyes of all nations, has thus confirmed and vindicated for his city and country a fame and a glory more enduring than brass, the students of the University of Pavia, with one mind and voice, have, with joy and congratulation, and in perpetuation of the honour, wished solemnly to dedicate this artistically illuminated parchment as a humble proof of their profound admiration.] The design and execution of the parchment, I may add, are due to Professor Provini, well known for his skill in that *métier*, and the inscription is from the pen of Pietro Rasi, the eminent occupant of the Latin chair in the Lombard University.

The Red Cross at the Pomptine Marshes.

THE LANCET has from time to time taken cognisance of the service organised by the Red Cross in the Roman Campagna—a service which has already gone far to minimise the death-rate from malaria in that region—a service, moreover, which is now, on the initiation of the Prefect, to be extended farther south, to the deadly level of the Palude Pontina. On Tuesday next (29th inst.) he will confer in Rome with the communes of that "zona malarica" from Velletri to Tarracina, the meeting being further reinforced by the Società per gli Studi della Malaria, by the Consorzio Idraulico Pontino, by representatives of the agrarian schools, and by other bodies interested, so as, in concert with the Red Cross, "to institute a permanent sanitary service" in that notorious and much-neglected "fever preserve." So constituted and equipped, with the admirable record of its "campagna antimalarica" to guide and encourage it, the "Red Cross Extension" may ere long be expected to reduce the all too heavy returns of disease and death on a seaboard held, from a remote antiquity, in the worst hygienic repute.

Jan. 26th.

CONSTANTINOPLE.

(FROM OUR OWN CORRESPONDENT.)

A New Hospital.

THE Ottoman Government has decided to build a new hospital in Stambul as an annexe to the Hamidié Hospital at Shishli. The new building will be provided with a special section for midwifery and gynæcological cases. I am informed that the Sultan intends to give a substantial sum from his private purse to enable the erection of the annexe to be begun as soon as possible.

Adulteration of Foodstuffs.

It has been found that macaroni and other similar articles of alimentation imported into Turkey are almost always adulterated. Chemical analysis undertaken by the laboratory of the Custom House reports that a certain kind of macaroni imported from Italy is coloured with dyes which are prejudicial to health. It has therefore been decided strictly to prohibit any further importation of the sophisticated article and to confiscate all which is already imported and offered for sale at the *bacals* (grocers).

The Water supply of Damascus.

The present water-supply of the city of Damascus is far from being satisfactory. Damascus is provided with water from a distant source which, before it arrives for distribution at Damascus, runs through plains, valleys, and villages, and becomes in its course contaminated by various impurities. Those settled around the source and the course of the water-supply throw into it all imaginable refuse. In the city itself the water receives new impurities in passing from house to house, and the cause of the prevalence in Damascus of typhoid fever requires no further explanation. It is intended now to remedy this dangerous state of affairs. The same source will be used, which is in itself perfectly pure, but a complete system of iron tubes will be provided and other general measures will be taken in order to make contamination impossible.

Disastrous Inundations.

The local newspapers have given full details of the terrible floods in the vilayet Aïdin. Immense spaces have been transformed into lakes, causing incalculable damage. Villages have been destroyed, many people have perished, and entire flocks of sheep and cattle have been drowned. The distress of the panic-stricken population was indescribable. It is estimated approximately that the material losses suffered by the surroundings of the locality of Sarouhan alone amount to 150,000 Turkish liras (one lira=18 shillings). The local authorities of the vilayet have done all in their power to lessen the sufferings of the population. Help has been sent from Constantinople. In Smyrna a special commission has been instituted, under the presidency of the Governor-General of the vilayet, with the purpose of collecting subscriptions for the calamity-stricken population and similar collections have been made in other important centres of the province.

The "Mangal."

In most of the houses in Constantinople as well as in other cities of Turkey heating in winter is done by means of the so-called *mangal*. This consists principally of a receptacle for burning charcoal. A *mangal* may be nothing else than such a simple brass or iron receptacle or may be quite an artistic and expensive article of most rare and valuable workmanship. The charcoal is first thoroughly burned through, and when it no longer emits any flame or odour the *mangal* is brought into the room for purposes of heating. Sometimes it happens that proper attention is not paid to the burning charcoal with not infrequent fatal results.

Jan. 19th.

CANADA.

(FROM OUR OWN CORRESPONDENT.)

Typhoid Fever in Ontario.

DURING the month of November, 1906, there was an abnormal prevalence of typhoid fever in the province of Ontario. As regards its chief city, Toronto, the intake pipe to the city reservoir runs on the bed of Toronto Bay, into which all the sewage is discharged, but although this pipe had a break and the drinking water was contaminated there was not much of the disease in the city. The prompt action of the medical health officer and the continuous advertisement of "boil the water," as well as the acceptance of the advice on the part of the people, cut short any chance of an epidemic. Throughout the entire province of Ontario about 1500 cases of the disease were treated and 113 deaths from it were recorded. Following immediately the break in the conduit in Toronto Bay the city held its annual municipal elections, but the ratepayers refused authority to the city council to deal effectively one way or another with the sewage problem, voting against the proposed by-law for a trunk sewer.

Typhoid Fever in Montreal.

In the city of Montreal and the immediate surrounding municipalities there are at the present time nearly 1000 cases of typhoid fever, and two young Montreal practitioners have succumbed to the disease. Dr. John D. Cameron, who graduated from McGill University in 1893, died on Jan. 4th from the disease at the age of 38 years. He was at the time of his death assistant gynæcologist to the Montreal General Hospital. The other victim was Dr. G. A. L. Payne, aged 27 years, who had only graduated from McGill University last year. All the hospitals in Montreal are filled. The Quebec board of health, through its secretary, Dr. E. Pelletier, will investigate and make a report on the outbreak.

Professor Osler's Visit.

During the latter part of December, 1906, Professor W. Osler with his family was visiting in Toronto and Montreal.

In Toronto he attended meetings of the medical profession on three occasions, on one of which at the Ontario Medical Library he unveiled a portrait of the late Dr. James E. Graham, formerly professor of medicine in the University of Toronto and one of the most distinguished physicians whom this continent has ever produced. This portrait was a present to the library by the widow and the son, Dr. J. S. Graham of Toronto.

The Toronto Board of Trade and Tuberculosis.

The Toronto Board of Trade has protested to the Government of the Dominion of Canada against admitting into Canada immigrants already the victims of tuberculosis, stating that the immigration inspectors are lax in their duties. The board bases its charge on the facts as secured from the Muskoka Free Hospital for Consumptives and from the Toronto Free Hospital for Consumptives at Weston, Ontario. At the former institution, out of 243 patients treated in the last hospital year, 83, or one-third, were of foreign birth, and an analysis of these individuals' cases shows that a goodly proportion of these left their homes already the victims of the disease. The board requests the Government that steps should be immediately taken to prevent embarkation for Canada of any emigrants suffering from any pulmonary or contagious diseases.

The Canadian Militia Medical Service.

Lieutenant-Colonel G. Carleton Jones, M.D. (Halifax, Nova Scotia), has been appointed Director-General of the Army Medical Service of the Canadian Militia at Ottawa, to succeed Lieutenant-Colonel Fiset who has been made deputy minister of militia. Lieutenant-Colonel H. S. Birkett, M.D., A.M.C. (Montreal), has been appointed principal medical officer of the Quebec Command, vice Dr. C. W. Wilson resigned. Lieutenant-Colonel and Hon. Colonel George Stirling Ryerson, M.D. (Toronto), has been transferred to the reserve of officers. Lieutenant-Colonel A. B. Osborne, M.D. (Hamilton, Ontario), has also been transferred to the reserve of officers. Major A. N. Hayes, M.D. (Sarnia, Ontario), becomes lieutenant-colonel, vice Colonel Ryerson transferred.

The Toronto Provincial Hospital for the Insane.

Dr. Charles K. Clarke, medical superintendent of the Toronto Provincial Hospital for the Insane, has been instrumental in securing the appointment by the Ontario Government of a resident pathologist to the institution over which he presides. The appointed officer, who will devote all his time to the work in this institution, is Dr. J. H. Fitzgerald, a graduate of recent date in the University of Toronto, who for the past two years has been pursuing special studies in psychiatrics in Johns Hopkins Hospital, Baltimore, and other hospitals of the United States. Dr. Clarke has made a distinct advance in this subject in Canada by securing this appointment.

The Deportation of Insane from Ontario.

The deportation of insane from the province of Ontario—that is, of those who have lived for less than two years in the province—is being actively conducted under the department of the Inspector of the Provincial Hospitals for the Insane. The Dominion Government Immigration Act provides for this and the province is taking advantage of the provisions of the Act. In the case of the English immigrants the correspondence and technical work are conducted through Canada's High Commissioner, Lord Strathcona. During the three months ending with November one was returned to Russia, two were returned to the United States, and five to England. There were then four awaiting return to England and one to Sweden. It is estimated that the province saves $2000 by each deportation.

Hospital Abuse in Montreal.

Now that the hospitals of Montreal are so constantly filled to overflowing hospital abuse seems to be more glaring. According to the medical men the Montreal General Hospital is the one hospital in that city which suffers most from hospital abuse. Day after day women drive up to the doors of the out-patient departments in cabs to receive free treatment at the hands of the physicians in attendance. It is quite plain that they could as well afford to pay for their medical advice and medicines as for their cabs, furs, silk clothes, and smart bonnets.

Jan. 20th.

Obituary.

JOHN NEWNHAM WINTER, M.R.C.S. ENG., M. AND L.S.A.

THE death of Mr. John Newnham Winter on Jan. 18th at his residence near Kew Gardens after a few days' illness from influenza removes one who was for many years extremely well known to the profession at Brighton. Educated at a private school at Winchester, of a type now practically extinct, he received his medical training at Guy's Hospital, qualifying as a Member of the Royal College of Surgeons of England and a Licentiate of the Society of Apothecaries in the year 1853. From 1853 to 1855 he was house surgeon at the Sussex County Hospital at Brighton. After a brief journey to Egypt and Palestine he joined his father, the late Mr. Thomas Bradbury Winter, in practice at Brighton. Here he rapidly acquired a very extensive practice and for a great many years there were few more familiar figures among the medical men of the town. For several years he was in partnership with his brother-in-law, the late Mr. F. W. Salzmann. Of an extremely retiring disposition, he shrank from all public office and he was too busy to discharge the duties incidental to professional appointments, but at the time of his death he was honorary consulting surgeon to the Brighton and Hove Hospital for Women and a few years ago he was elected a member of the Society of Apothecaries and frequently attended the meetings of the Court. On his relinquishing practice in 1900, at the age of 70 years, he settled at Kew, no doubt determined in his choice by his devotion to flowers and gardening. He was a recognised authority on filmy ferns and was frequently consulted by those interested in such subjects.

His funeral at Brighton on Jan. 21st produced many testimonies to the respect in which he was universally held.

ALEXANDER PEDDIE, M.D. EDIN., F.R.C.P. EDIN.

BY the death of Dr. Alexander Peddie a venerable link with the past has been removed from the medical life of Edinburgh and of Scotland. Born in 1810 he was in his ninety-seventh year. He was the son of the Rev. Dr. James Peddie who was minister of the United Associate Congregation in Bristo-street, Edinburgh, for 62 years. He died in his house in Rutland-street, Edinburgh, on Jan. 19th. Until quite recently he could from time to time be seen in the streets at the west-end of Edinburgh, where his erect figure and white hair hardly revealed his age. His advanced age has naturally turned men's minds to think of all that the world has passed through in the span of one man's life, while to the medical man it is little short of incredible that there is so much difference between the profession of to-day and of 90 years ago, and yet Dr. Peddie lived and worked during the greater changes which signalised the last half of the nineteenth century. Dr. Peddie began his medical life by becoming an apprentice to Professor James Syme in November, 1830; in 1835 he became a Licentiate of the Royal College of Surgeons of Edinburgh and took the degree of M.D. at the University of the same city. In 1845 he was admitted F.R.C.P. Edin. The autumn and winter of 1835 were spent on the continent in travel and study. On his return to Edinburgh he began general practice. For many years, first in conjunction with Dr. John Brown and Dr. Cornwall and then alone, he carried on a hospital and dispensary at Minto House when Syme gave it up on being appointed to the staff of the Royal Infirmary. His contributions to medicine, written in the earlier years of his career, were published in the *Edinburgh Medical Journal* and it is interesting to note that in 1854 he published a paper suggesting that inebriety was a manifestation of insanity and that he treated delirium tremens without stimulants or opiates. He dealt in another paper with Legalised Arrangements for the Treatment of Dipsomania. He was regarded as such an authority on the question that he on two different occasions gave evidence before committees investigating the question. In this he was much in advance of his time. As early as 1845 he wrote on the "Contagious Nature of Puerperal Fever" and in 1849 he was advocating the establishment of a hospital for sick children. He thus showed himself to be possessed of some of the higher faculties of the physician which might have still further enriched the medical literature of Edinburgh, but he devoted his time and

energies to a large family practice, and in this work few men won more confidence and affection from their patients than Dr. Peddie received. He was, however, possessed of varied gifts; he was an enthusiastic musician and a keen sportsman, his special delight being salmon fishing. His last salmon was caught when he was 84 years of age. He belonged to the United Presbyterian Church for many years and was present when that body united with the Free Church in 1900.

He has been widely known as the intimate friend of Dr. John Brown, the author of "Rab and His Friends." In 1890, when President of the Edinburgh Harveian Society, his oration was devoted to reminiscences of his old friend and this oration was amplified into a larger biographical sketch. Dr. Peddie was buried in Warriston Cemetery, Edinburgh, on Jan. 23rd, the funeral being attended by the Presidents of the Edinburgh Royal Colleges of Physicians and of Surgeons and many other members of the medical profession. Mrs. Peddie predeceased her husband by a few years.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated:—

Surgery.—H. A. Fenton (Section II.), St. Mary's Hospital; O. P. N. Pearn (Sections I. and II.), Westminster Hospital; D. E. C. Pottinger (Sections I. and II.), Edinburgh; and S. Singh (Sections I. and II.), Glasgow.

Medicine.—M. L. Ford (Section I.), London Hospital; D. E. C. Pottinger (Section II.), Edinburgh; C. S. Spencer (Sections I. and II.), Manchester; A. R. Wade (Section II.), St. Bartholomew's Hospital; and C. J. Wolfe (Section I.), Edinburgh and London Hospital.

Midwifery.—C. F. Curtis, Manchester; and A. C. J. Elwin and J. F. McQueen, King's College Hospital.

The diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery: O. P. N. Pearn and D. E. C. Pottinger.

UNIVERSITY OF OXFORD.—In a congregation held on Jan. 24th the following degrees were conferred:—

B.M., B.Ch.—H. G. F. Spurrell, Merton College; H. A. Philpot, New College; H. R. Ramsbotham, Brasenose College; B. E. A. Batt, Trinity College; C. Beards, Jesus College; and H. H. Carleton, Keble College.

D.Sc.—G. F. H. Smith, New College.

FOREIGN UNIVERSITY INTELLIGENCE.—*Basle:* Dr. Oppikofer has been recognised as *privat-docent* of Otology.—*Bonn:* The title of Professor has been conferred upon Dr. Karl Grouven, *privat-docent* of Dermatology; Dr. Eduard Hummelsheim, *privat-docent* of Ophthalmology; and Dr. Julius Strasburger, *privat-docent* of Internal Medicine.—*Erlangen:* Dr. Spaeth, a well-known writer on medical chemistry, has been granted the title of Professor.—*Freiburg:* Dr. W. Spielmeyer has been recognised as *privat-docent* of Mental Diseases.—*Halle:* Dr. Louis Wullstein, *privat-docent* of Surgery, has been granted the title of Professor.—*Harvard:* Dr. Walter B. Cannon has been appointed Professor of Physiology.—*Heidelberg:* Dr. Franz Fischler has been recognised as *privat-docent* of Medicine.—*Kiel:* Dr. Julius Raecke of the Clinic for Mental Diseases has been granted the title of Professor.—*Odessa:* Dr. Shchegoleff, Extraordinary Professor of Surgery, has been promoted to an Ordinary Professorship.—*Vienna:* An Institute of the History of Medicine is to be established under the direction of Professor Neubuirger and Professor von Töply.—*Würzburg:* Dr. Adolf Treutlein has been recognised as *privat-docent* of Marine and Tropical Hygiene.

DONATIONS AND BEQUESTS.—By the will of Mr. Aubrey Hillman, of Lewes, Sussex, £1000 are bequeathed to the Lewes Dispensary and Infirmary and Victoria Hospital, Lewes.—The executors of the late Mr. J. L. Toole have sent to Charing Cross Hospital the sum of £900 for the purpose of endowing a bed in memory of the famous actor. The executors have also given to the National Hospital for the Paralysed and Epileptic, Bloomsbury, £225.—The residue of the estate of the late Mr. William Bykur of Seldown, Dorset, which will probably amount to £20,000, will be divided among the following institutions: Royal Free Hospital, Guy's Hospital, the London Hospital, Middlesex Hospital, the East London Hospital for Children, Shadwell, the Victoria Hospital, Bournemouth, the North London or University College Hospital, and the Westminster Hospital.

St. John's House, for many years in Norfolk-street, Strand, has removed to 12, Queen-square, Bloomsbury.

UNIVERSITY OF CAMBRIDGE.—The Third M.B. Examination, Part II., will begin on Tuesday, April 23rd, and the examination for M.C. on Thursday, April 25th. The names of the candidates have to be sent to the Registrary by April 9th.—Dr. R. M. Simon has been appointed an examiner in medicine in the place of Professor W. Osler.

SELF-WILLED LEPERS.—A number of lepers some time ago, discontented with their lot, went to St. Petersburg to air their grievances, and after a time were sent back to the leper establishment of Yamburg. Now the head medical officer of the Alaphusovsk Hospital has reported the receipt of a letter from them, says the *Novoe Vremya*, stating that they have no medical man in attendance and that very soon they will again betake themselves to St. Petersburg to be cared for there; and he hopes that the requisite measures will be adopted to prevent their proposed second unsolicited visit to the capital.

THE HOSPITAL SATURDAY FUND.—At a meeting of the board of delegates held on Jan. 19th at the offices of the Fund, Gray's Inn-road, under the presidency of Sir Savile B. Crossley, it was unanimously resolved, on the recommendation of the distribution committee, that a sum of £23 898 14*s.* 11*d.* should be awarded to the 106 participating hospitals, dispensaries, and convalescent homes as follows: 31 general hospitals, £8102 2*s.*; 15 cottage hospitals, £312 14*s.*; 76 special hospitals, £7938; 31 dispensaries, £911 10*s.*; 23 convalescent homes, £1469 14*s.*; 17 nursing institutions, £385 8*s.*; and 13 miscellaneous (including ambulance, distribution, and surgical appliance committee), £4779 6*s.*

PUBLIC VACCINATORS AND POOR-LAW MEDICAL OFFICERS.—At a meeting of the Liskeard board of guardians held on Jan. 19th a discussion arose in reference to the appointment of a district medical officer. The guardians had made a stipulation with this gentleman, who was a public vaccinator as well as a district medical officer, that if he resigned one office he must resign both. The Local Government Board, however, would not sanction the appointment if these conditions were imposed as it held that the medical officer was eligible for either position as long as he resided in the district. Eventually a member gave notice that at a future meeting he would move that the appointment should be given according to the instructions of the Local Government Board.

THE ITALIAN HOSPITAL.—The annual meeting of the supporters of the Italian Hospital in Queen-square, London, W.C., was held on Jan. 18th, the Italian Ambassador, who is the president of the hospital, being in the chair. The committee's report stated that upwards of 14,000 patients, including more than 6000 British subjects, had been treated during the year. Dr. Michael Castaneda, consulting physician to the hospital and chairman of the committee, said that the King of Italy had sanctioned a scheme which had been brought forward to establish an endowment for the hospital. A subsequent speaker complained of the heavy local rates which absorbed between £250 and £300 a year. It was stated that the Italian Government made an annual grant of £100 and that £500 had been received from King Edward's Hospital Fund for London. The members of the committee were re-elected and the proceedings terminated with the usual votes of thanks.

LITERARY INTELLIGENCE.—The Liverpool School of Tropical Medicine is issuing a new periodical entitled "The Annals of Tropical Medicine and Hygiene," which bids fair to be of great value to the medical profession. The first number of the Annals will appear early in 1907 and will replace the series of separate memoirs of the Liverpool School of Tropical Medicine, several of which have been published. Many of these memoirs have been noticed in our columns as they appeared, and if the standard of their excellent printing and profuse illustration is maintained in the new Annals we think that the

experiment ought to be a distinct success. The Annals will be edited by Professor Ronald Ross, with whose work Dr. J. W. W. Stephens, Dr. John L. Todd, Dr. H. Wolferstan Thomas, Dr. Anton Breinl, Mr. Robert Newstead, and Sir Rubert W. Boyce will be associated. The subscription (10s. 6d. per annum, post free) can be forwarded at once to the secretary of the Liverpool School of Tropical Medicine, B 10, Exchange buildings, Liverpool.—We reviewed the first edition of MacCabe's "War with Disease" in our issue of Jan. 17th. A second and enlarged edition in a cloth cover has now been published at 1s. net by Messrs. Bailliére, Tindall, and Cox. This edition is dedicated, by permission, to H.R.H. the Duke of Connaught.—Messrs. Methuen are issuing a work on the alcohol question entitled "The Drink Problem in its Medico-Sociological Aspects," and edited by T. N. Kelynack, M.D. Vict., M.R.C.P. Lond., honorary secretary of the Society for the Study of Inebriety.

ROYAL UNITED HOSPITAL, BATH.—A public meeting was held at the Guildhall, Bath, on Jan. 22nd, under the presidency of the Mayor, to consider the financial position of the Royal United Hospital and the best means of reducing the debt of £5000 which exists on the institution. The Mayor will make an effort to wipe off the debt during his year of office and stated that he had already received several subscriptions for this purpose. After some discussion the meeting pledged itself to support the mayor in his admirable determination to place the Royal United Hospital on a sound financial basis.

FRIENDLY SOCIETIES AND THEIR MEDICAL OFFICERS.—Replying to the toast of "The Medical Officer" at the annual dinner of the Pioneer Benefit Society, held recently at Warminster, Wiltshire, Mr. F. I. Flower, M.R.C.S. Eng., said that although both the social condition of working men and their wages had been raised the medical officers to working men's clubs were very inadequately remunerated. He thought that in all clubs there should be special fees for cases of fractured limbs and operations and that in time it would have to be so.

UNREGISTERED MIDWIVES AT TRURO.—An inquiry was held at Truro, Cornwall, on Jan. 24th relative to the death of a newly born infant. The mother of the child had been attended by an uncertified midwife. The coroner (Mr. E. Carlyon) said that there was no suspicion of foul play, but he warned the midwife against continuing to act as such. Mr. Carlyon added that of all the midwives practising in Truro only two were registered. The jury eventually decided "that the attention of the Cornwall county council should be called to the fact that there were women practising midwifery in Truro without certificates."

THE NEWLY UNITED CLINICAL SCHOOL OF THE UNIVERSITY OF LIVERPOOL.—The first annual dinner of the united clinical school in connexion with the University of Liverpool was held at the Adelphi Hotel, Liverpool, on Jan. 24th. Sir James Barr, the chairman of the united clinical school, presided, and there was a large gathering of members of the profession and leading citizens. Prior to October last the united hospitals clinical school, comprising the David Lewis Northern Hospital, the Royal Southern Hospital and the Stanley Hospital, competed in friendly rivalry with the Royal Infirmary in training medical students in clinical work. Largely owing to the tactful efforts of Dr. T. R. Bradshaw, as gracefully acknowledged in his speech by Sir James Barr, a union has been effected by which one large and greatly strengthened clinical school is provided for the medical students of the University of Liverpool. Professor A. M. Paterson, in proposing one of the toasts, said that the union of the hospitals for the purpose of clinical teaching suggested to him and others the establishment of one central local authority for the administration and control of all the hospitals—general, civic, and Poor-law. Objection was taken to this suggestion by Sir Robert Hampson, the President of the Stanley Hospital, on the ground that it might promote "central control and officialism," and by Mr. Ralph Brocklebank, the chairman of the Royal Infirmary, who deprecated any step that would tend to bring the voluntary hospitals on to the rates. However, it ought not to be impracticable to devise some scheme whereby the individuality of the general hospitals should be maintained and at the same time the advantages of combination might also be attained.

BOOKS, ETC., RECEIVED.

A. STUBER'S VERLAG (CURT KABITZSCH), Würzburg.

Diagnose und Therapie der Anämien. Nach funktionellen Gesichtspunkten auf Grundlage Qualitativer Blutuntersuchung. Besonders für Aerzte und Studierende. Bearbeitet von Dr. Joseph Arneth, Privatdozent an der Kgl. Universität Würzburg. (Würzburger Abhandlungen aus dem Gesamtgebiet der praktischen Medizin. Herausgegeben von Prof. Dr. Joh. Müller und Prof. Dr. Otto Seifert. I. Supplement-Band.) Price M.9.

ASSOCIATION OF AMERICAN PHYSICIANS. (Dr. SOLOMON SOLIS COHEN, Recorder of the Association, 1525, Walnut-street, Philadelphia, U.S.A.).

Transactions of the Association of American Physicians. Twenty-first Session, held at Washington, D.C., May 15th and 16th, 1906. Volume XXI. Price not stated.

BLACK, ADAM AND CHARLES, Soho-square, London, W.

The Writers' and Artists' Year-book, 1907. A Directory for Writers, Artists, and Photographers. Second Year of New Issue. Price 1s. net.

The Englishwoman's Year-book and Directory, 1907-8. Edited by Emily Janes, Organising Secretary to the National Union of Women Workers of Great Britain and Ireland. Twenty-seventh year. Price 2s. 6d. net.

CATHOLIC TRUTH SOCIETY OF SCOTLAND, Glasgow. (ROBERT GIBSON AND SONS (GLASGOW, LIMITED), 45, Queen-street, Glasgow.)

A Modern Miracle (Pierre de Rudder). By Alfred Deschamps, S.J., M.D., Sc.D. Translated from the French by Felix Rankin, S.J. Price 6d.

CAXTON PUBLISHING COMPANY, Clun House, Surrey-street, Strand, London, W.C.

The Nursling. The Feeding and Hygiene of Premature and Full-term Infants. By Pierre Budin, Professor of Obstetrics, University of Paris, Director of the Clinique Tarnier, Member of the Academy of Medicine. Authorised Translation by William J. Maloney, M.B., Ch.B., Fellow of the Obstetrical Society of Edinburgh, Ettles Scholar, Houldsworth Research Scholar, &c. With an Introduction by Sir Alexander R. Simpson, M.D., LL.D., D.Sc., Emeritus Professor of Midwifery and Diseases of Women and Children, University of Edinburgh. Price 21s. net.

CHATTO AND WINDUS, 111, St. Martin's-lane, London, W.C.

Herbert Fry's Royal Guide to the London Charities. Edited by John Lane. New and revised edition—the Forty-third. Price 1s. 6d.

CHURCHILL, J. AND A., 7, Great Marlborough-street, London, W.

Guy's Hospital Reports. Edited by F. J. Steward, M.S., and Herbert French, M.D. Vol. LX., being Volume XLV. of the Third Series. Price, to subscribers, 6s.; to non-subscribers, 10s. 6d.

Reports of the Society for the Study of Disease in Children. Volume VI. Session of 1905-1906. Editor: George Carpenter, M.D. Price 12s. 6d. net.

COBLENTZ, OSCAR, Maassenstrasse, 13, Berlin, W.30.

Die Therapie der Haut- und Geschlechtskrankheiten. Für praktische Aerzte. Von Dr. Reinhold Ledermann, Spezialarzt für Hautkrankheiten in Berlin. Dritte durchgesehene und erweiterte Auflage des Therapeutischen Vademekum der Haut- und Geschlechtskrankheiten. Price M.6.

FISCHER, GUSTAV, Jena.

Die Koronararterien des menschlichen Herzens unter normalen und pathologischen Verhältnissen. Dargestellt in stereoskopischen Röntgenbildern. Von Dr. F. Jamin, a.o. Professor und Dr. H. Merkel, Privatdozent. Aus der medizinischen Klinik und dem pathologischen Institut zu Erlangen. Price M.10.

Die Lehre von der Krebskrankheit von den ältesten Zeiten bis zur Gegenwart. Von Sanitätsrat Dr. Jacob Wolff, Prakt. Arzt in Berlin. Price M.20.

Handatlas der Entwicklungsgeschichte des Menschen. Von Dr. Julius Kollmann, O. . Professor der Anatomie an der Universität, Basel. Erster Teil: Progenie, Blastogenie, Adnexa Embryonis, Forma Externa Embryonum, Embryologia Ossium, Embryologia Musculorum. Price M.13; bound, M.15.

GRIFFIN, CHARLES, AND COMPANY, LIMITED, Exeter-street, Strand, London, W.C.

The Year-Book of the Scientific and Learned Societies of Great Britain and Ireland. Compiled from Official Sources. Twenty-third Annual Issue. Price 7s. 6d.

J. B. LIPPINCOTT COMPANY, Philadelphia and London.

Pediatrics. The Hygiene and Medical Treatment of Children. By Thomas Morgan Rotch, M.D., Professor of Pediatrics, Harvard University. Fifth edition, rearranged and rewritten. Price 25s. net.

J. U. KERN'S VERLAG (MAX MÜLLER), Teichstrasse, 8, Breslau.

Geschichte der Pestepidemien in Russland von der Gründung des Reiches bis auf die Gegenwart. Nach den Quellen bearbeitet von Dr. med. F. Dörbeck, Primararzt am Französischen Hospital St. Marie Magdeleine zu St. Petersburg. (Abhandlungen zur Geschichte der Medizin. Herausgegeben von Geh. Medizinalrat Professor Dr. Hugo Magnus. Heft XVIII.) Price M.6.

KEGAN PAUL, TRENCH, TRÜBNER, AND CO., LIMITED, Dryden House, Gerrard-street, London, W.

The International Scientific Series. Edited by F. Legge.
The Mind and the Brain. By Alfred Binet, Directeur du Laboratoire de Psychologie à la Sorbonne. Being the authorised Translation of *L'Ame et le Corps*. Price 5s.

KING, P. S., AND SON, 2 and 4, Great Smith-street, Westminster, London, S.W.

Our Heritage in the Land. By Harold E. Moore, F.S.I., F.S.S., Author of "Hints on Land Improvements," "Back to the Land," &c. With Introduction and Scheme for State Aid by Sir William Mather, LL.D., M.I.C.E. Second edition. Price 1s. net.

LEHMANN, J. F., Heustrasse, 20, München.

Lehmann's Medizinische Atlanten. Band IV. Atlas der deskriptiven Anatomie des Menschen. Von Dr. med. J. Sobotta, a.o. Professor und Prosektor der Anatomie und der anthropotomischen Anstalt in Würzburg. III. Abteilung. 2 Lieferung: Die Sinnesorgane des Menschen, nebst einem Anhang: Das Lymphgefässsystem des Menschen. Preis M.6. Text-Band dazu, Preis M.6.

LONGMANS, GREEN, AND CO., 39, Paternoster-row, London, E.C.

Human Personality and its Survival of Bodily Death. By Frederic W. H. Myers. Edited and abridged by his son, Leopold Hamilton Myers. Price 10s. 6d. net.

Longmans' Civil Engineering Series. Sanitary Engineering with respect to Water-Supply and Sewage Disposal. By Leveson Francis Vernon-Harcourt, M.A., M.Inst.C.E. Price 14s. net.

Thirty-second Annual Edition of the Classified Directory to the Metropolitan Charities for 1907. By W. F. Howe, Editor of each of the Thirty-two Editions. Price 1s.

MURRAY, JOHN, 50A, Albemarle-street, London, W.

Recent Progress in the Study of Variation, Heredity, and Evolution. By Robert Heath Lock, M.A., Fellow of Gonville and Caius College, Cambridge. Price 7s. 6d. net.

NEW SYDENHAM SOCIETY, London. (Agent: H. K. LEWIS, 136, Gower-street, London, W.C.)

An Atlas of Illustrations of Clinical Medicine, Surgery, and Pathology. Compiled for the New Sydenham Society. (A Continuation of the "Atlas of Pathology.") Chiefly from Original Sources. Fasciculus XXV. *bis.* (Double Number). Being XXII. and XXIII. of The Clinical Atlas. Variola, Vaccinia, and Varicella. Price to non-subscribers, one guinea.

RICHARDS, H. GRANT, 7, Carlton-street, London, W.

The Birds of the British Islands. By Charles Stonham, C.M.G., F.R.C.S., F.Z.S. With Illustrations by Lilian M. Medland. In 20 Parts. Part IV. Price 7s. 6d. net.

SIMPKIN, MARSHALL, HAMILTON, KENT, AND CO., London.

A History of Dancing. By Reginald St. Johnston, M.R.C.S., L.R.C.P., Author of "The Dream Face," &c. Price not stated.

SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION. (Secretary: WILLIAM D. HAGGARD, M.D., 143, Eighth-avenue, N., Nashville, Tennessee, U.S.A.).

Transactions of the Southern Surgical and Gynecological Association. Volume XVIII. Eighteenth Session, held at Louisville, Kentucky, Dec. 12th, 13th, and 14th, 1905. Edited by W. D. Haggard, M.D. Price not stated.

SPRINGER, JULIUS, Monbijouplatz, 3, Berlin.

Medizinisch-klinische Diagnostik. Lehrbuch der Untersuchungsmethoden innerer Krankheiten für Studierende und Aerzte. Von Professor Dr. F. Wesener, Oberarzt des Städtischen Elisabeth-Krankenhauses zu Aachen. Zweite, umgearbeitete und vermehrte Auflage. Price M.18.

SWAN SONNENSCHEIN AND CO., LIMITED, 25, High-street, Bloomsbury, London, W.C.

The Tourist's India. By Eustace Reynolds-Ball, F.R.G.S., F.R.C.I. Price 10s. 6d.

THE ACADEMY OF MOTORING, LIMITED, 85, New Bond-street, London, W.

The Motorists' Hand-book and Calendar for 1907. Price 2s. 6d.

VIGOT FRÈRES, 23, Place de l'École-de-Médecine, Paris.

La Stérilité chez la Femme. Son Traitement par les Agents Physiques. Par le Dr. E. Hugon, Ancien Chef de Clinique Gynécologique. Price Fr.2.

Notions Élémentaires de Prophylaxie des Maladies Tropicales. Par R. Wurtz, Professeur agrégé, Chargé de Cours à l'Institut de Médecine Coloniale de Paris. (Extrait de la Revue de Médecine et d'Hygiène Tropicales.) Price Fr.1.

Manuel Pratique de Massage et de Gymnastique Médicale Suédoise. Par J. E. Marfort, Ex-Professeur de Massage et de Gymnastique Médicale et Orthopédique à l'Institut de l'Empereur Nicolas Ier. Troisième édition. Price Fr.5.

Traité des Urines. L'Analyse des Urines considérée comme un des Éléments de Diagnostic. Par le Dr. E. Gécard, Professeur de Pharmacie et de Pharmacologie à la Faculté de Médecine et de Pharmacie de Lille. Deuxième édition corrigée et augmentée. Price Fr.8.

Manuel de Gynécologie Pratique. Par J. Barozzi, Ancien Interne des Hôpitaux de Paris, Lauréat de la Faculté de Paris. Préface de M. L.-G. Richelot, Professeur agrégé à la Faculté de Médecine de Paris. Price Fr.10.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BEGG, CHARLES MACKIE, M.D., M.R.C.P. Edin., has been appointed Public Vaccinator at Wellington, New Zealand.

BLUCKE, HENRY FREDERICK STOKES, L.R.C.P., M.R.C.S., has been appointed Medical Officer of Health of Shaftesbury, Dorset.

CANN, FRANCIS JOHN HUGHTREDE, M.B. Lond., L.R.C.P., M.R.C.S., has been appointed Honorary Medical Officer to the Dawlish Cottage Hospital.

CHEATLE, C. T., M.R.C.S., L.R.C.P. Lond., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Burford District of the county of Oxford.

COPLANS, MYER, M.D. Lond. (State Medicine), D.P.H. Camb., has been appointed Demonstrator of Bacteriology in the Faculty of Medicine of the University of Leeds.

ELDER, DOUGLAS, M.B., Ch.B. Liverp., has been appointed Pathologist to the King Edward VII. Sanatorium, Midhurst, Sussex.

FENTON, W. J., M.D. Cantab., M.R.C.P. Lond., has been appointed Assistant Physician to the Hospital for Consumption and Diseases of the Chest, Brompton.

HOGG, ALEXANDER WILSON, M.B., B.S. Edin., has been appointed Public Vaccinator at Wellington, New Zealand.

HUDSON, ARTHUR, L.R.C.P., M.R.C.S., D.P.H. Camb., has been appointed Honorary Medical Officer to the Dawlish Cottage Hospital.

LAWRENCE, C. J. MONTAGU, L.S.A., has been appointed Junior House Surgeon at the Borough Hospital, Birkenhead.

LOVELY, CHARLES NEWTON, M.D., B.S. Durh., has been appointed Honorary Medical Officer to the Dawlish Cottage Hospital.

MCCORMICK, WILLIAM MILLIGAN, M.B., M.S. Glasg., has been appointed Public Vaccinator at Tokomairiro, New Zealand.

RAWES, LESLIE, M.R.C.S. Eng., L.R.C.P. Lond., has been appointed Junior Resident Medical Officer at the Royal Waterloo Hospital for Children and Women.

ROBINSON, H. BETHAM, M.S. Lond., F.R.C.S., has been appointed Surgeon to St. Thomas's Hospital.

SAWARD, A. H. M., M.R.C.S., L.R.C.P. Lond., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Richmond District of the county of Surrey.

STEVENS, WILLIAM MITCHELL, M.D. Lond., M.R.C.P. Lond., M.R.C.S., has been appointed Honorary Consulting Physician to the Royal Hamadryad Seamen's Hospital, Cardiff.

STUART, HACKWORTH, M.D. Lond., F.R.C.S. Eng., D.P.H. Cantab., has been appointed Medical Officer to the Staffordshire County Industrial School, Werrington, Stoke-on-Trent.

TRIPP, CHARLES LLEWELLYN HOWARD, M.R.C.S., L.R.C.P., L.S.A., has been appointed Honorary Medical Officer to the Dawlish Cottage Hospital.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BATH ROYAL UNITED HOSPITAL.—Resident Medical Officer. Salary £100 per annum, with board, lodging, and washing.

BIRMINGHAM, QUEEN'S HOSPITAL.—Honorary Physician.

BRECON AND RADNOR JOINT COUNTIES ASYLUM, Talgarth, R.S.O., Breconshire.—Assistant Medical Officer, unmarried. Salary £150, rising to £170 per annum, with apartments, board, washing, and attendance.

BRISTOL EYE HOSPITAL.—House Surgeon. Salary £30, with board and residence.

CENTRAL LONDON THROAT AND EAR HOSPITAL, Gray's Inn-road.—Registrar for In patients. Salary 20 guineas a year.

CHELSEA, BROMPTON, AND BELGRAVE DISPENSARY, Manor street, King's-road, Chelsea.—Visiting Medical Officer.

DUMFRIES AND GALLOWAY ROYAL INFIRMARY.—Assistant House Surgeon. Salary £25 per annum, with board and washing.

GLASGOW DISTRICT ASYLUM, Gartloch.—Resident Assistant Medical Officer. Salary £125, with board and lodging.

GLOUCESTER GENERAL INFIRMARY AND GLOUCESTERSHIRE EYE INSTITUTION.—Surgeon.

HAMPSTEAD GENERAL HOSPITAL.—Resident Medical Officer. Salary £30 per annum, with board and residence.

HASTINGS, ST. LEONARDS, AND EAST SUSSEX HOSPITAL.—Assistant House Surgeon for six months. Honorarium £20, with residence, board, and washing.

KING EDWARD VII. SANATORIUM, Midhurst, Sussex.—Junior Assistant Medical Officer, unmarried. Salary £100 per annum, with board, lodging, and attendance.

LIVERPOOL HOSPITAL FOR CONSUMPTION.—Honorary Assistant Physician.

LONDON LOCK HOSPITAL.—Surgeon to Out-patients.

MANCHESTER, ANCOATS HOSPITAL.—Resident House Physician. Salary £80 per annum, with board, &c.

MANCHESTER, MONSALL FEVER HOSPITAL.—Fourth Medical Assistant. Salary £100 per annum, with board, lodgings, and washing.

MANCHESTER, ST. MARY'S HOSPITALS FOR WOMEN AND CHILDREN.—House Surgeon for six months. Salary £25, with board and residence.

NEWCASTLE-UPON-TYNE, CITY HOSPITAL FOR INFECTIOUS DISEASES.—Resident Medical Assistant. Salary £104 per annum, with board, lodging, &c.

NEWCASTLE-UPON-TYNE AND NORTHUMBERLAND SANATORIUM FOR CONSUMPTION, Barrasford-on-Tyne.—Resident Medical Officer. Salary £180 per annum, rising to £200, with board and laundry.

PADDINGTON GREEN CHILDREN'S HOSPITAL, London, W.—Honorary Anæsthetist.

PLYMOUTH, SOUTH DEVON AND EAST CORNWALL HOSPITAL.—Assistant House Surgeon for six months, renewable. Salary £50, with board, residence, and washing.

RIPON UNION DISTRICT AND WORKHOUSE, Yorkshire.—Medical Officer. Salary £37 10s.

ROYAL EAR HOSPITAL, Dean-street, Soho, W.—Two Clinical Assistants for six months.

ROYAL HOSPITAL FOR DISEASES OF THE CHEST, City-road, E.C.—Resident Medical Officer for six months. Salary at rate of £120 per annum, with apartments, board, and washing.

ST. BARTHOLOMEW'S HOSPITAL.—Surgeon and Assistant Surgeon to the Throat Department.

STAFFORD, STAFFORDSHIRE GENERAL INFIRMARY.—Assistant House Surgeon for six months. Salary £31, with board, residence, and laundry.

STROUD GENERAL HOSPITAL.—House Surgeon. Salary £100 per annum, with board, lodging, and washing.

VENTNOR, ISLE OF WIGHT, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST.—Assistant Resident Medical Officer, unmarried. Salary £100, with board and lodging.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—Physician to the Out-patients.

WEST BROMWICH DISTRICT HOSPITAL.—Resident Assistant House Surgeon, unmarried. Salary £50 per annum, with board, residence, and washing.

WESTERN GENERAL DISPENSARY, Marylebone-road, N.W.—Honorary Surgeon.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies as Certifying Surgeon under the Factory and Workshop Act at Malton, in the county of York; and at East Linton, in the county of Haddington.

Births, Marriages, and Deaths.

BIRTHS.

BATTLE.—On Jan. 21st, at Harley-street, Cavendish-square, W., the wife of William Henry Battle, F.R.C.S., of a son.

COOKE.—On Jan 26th, at Bridge-street, Cambridge, the wife of Arthur Cooke, F.R.C.S., of a son.

ELLIS.—On Jan 23rd, at London-road, Leicester, the wife of L. Erasmus Ellis, M.D., of a son.

ROGERS.—On Jan. 24th, at Sutherland-avenue, W., the wife of David de Sola Cohen Rogers, L.D.S. R.C.S. Eng., of Buenos Aires, of a son.

MARRIAGE.

HEDLEY-HALLIDAY.—On Jan. 12th, at St. Mary's, Harrow, by the Rev. T. Wayland Joyce, assisted by the Rev. R. Howel Brown, vicar of Ennold, Dr. John Prescott Hedley, son of Dr. and Mrs. Hedley, Middlesbrough, to Miss Kathleen Halliday, daughter of Mr. and Mrs. James Halliday, Fishers, Harrow.—At home, 11, John-street, Mayfair, W., March 12th to 17th, 1907.

DEATH.

OLDHAM.—On Jan. 24th, at Brighton, Charles James Oldham, F.R.C.S., aged 62 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

COPPERED PEAS.

AT the Bournemouth police court on Jan. 18th a number of local grocers were each fined 40s., including costs, for selling bottled green peas mixed with copper salt. According to the analytical reports of the borough analyst, Mr. F. A. Cripps, F.I.C., the five samples contained copper in quantities equivalent to copper sulphate in the following proportions per pound of the whole sample and of the sample exclusive of liquor: 2·04 grains and 3·35 grains; 2·5 grains and 3·9 grains; 2·02 grains and 3·05 grains; 1·85 grains and 2·8 grains; 1·59 grains and 2·45 grains. As from one-quarter to two grains is the quantity allowed by the British Pharmacopœia as an astringent, it was stated that three or four ounces of some of the samples would contain a good astringent dose. Mr. Cripps said he had found that from 30 to 60 per cent. of the copper salt was dissolved by pepsine in two hours. In six hours 90 per cent. was dissolved, while in pepsine and pancreatine almost the whole was digested. He further gave it as his opinion that the cause of the divergence of medical opinion as to the effects of copper salts on the human system was that some of them conducted their experiments with the inorganic salts while others used the organic. Mr. P. W. G. Nunn, medical officer of health of Bournemouth, also gave evidence for the prosecution and suggested that the eating by a child of a quantity of the peas under consideration would lead to serious or even fatal consequences. Copper was a colouring "fakement" and did not add to the food value of the product. There were bottled peas on the market prepared without the addition of copper sulphate and he had eaten them himself. Sulphate of copper being a poison, its use for this purpose was risky.

Without entering into the vexed question of whether small quantities of copper salts are harmful or not, we can say in the most emphatic way that all foodstuffs containing this or any other colouring matter should be definitely labelled with an intimation of the quantity of the colouring matter per pound employed and with a statement of its nature. The argument of the traders who use these colouring matters is always the same: first, they argue that it does no harm; and secondly, that people will not buy the foodstuff unless it is coloured. This being so, it can do no harm to trade to let the customer know that he is buying, according to the trader, a harmless substance, and one which he likes. But until such labelling is made compulsory the trader will never sell goods with such a label, for he knows very well that most people would not buy peas or other foodstuffs if they were told that they contained copper salts. The Departmental Committee on Food Preservatives recommended the absolute prohibition of copper salts for "greening" vegetables.

A POINT IN ETHICS.

To the Editors of THE LANCET.

SIRS,—Will you kindly give me your opinion upon the following case? Last Friday I was called to a woman who had just had a miscarriage. I attended her for some hours and left her quite comfortable. I visited her every day and on the fourth day I found her sitting up and she told me she had been moving about from one room to another for a short time. On the sixth day I am called urgently to her and found her in pain and losing blood. I gave some ergot and on examination found nothing to account for it. There was no febrile reaction. She passed a rather bad night, but in the morning was more comfortable. On going to see her on the same evening I am told by the servant that her mistress has called in a nurse who has brought her own doctor. How should I act in those circumstances?

I am, Sirs, yours faithfully,

Jan. 25th, 1907. MEDICUS.

*** If the patient wishes in future to be attended by the nurse's "own doctor" she has a right so to be attended and our correspondent should withdraw from the case. The nurse's "own doctor" would, however, be acting unprofessionally if he took over the case without previously informing our correspondent.—ED. L.

HASTINGS AND ST. LEONARDS.

AT the request of the mayor and town council of the borough of Hastings Dr. A. Scarlyn Wilson, medical officer of health of the borough, has written a small pamphlet entitled "Notes on Hastings and St. Leonards," dealing with the climatology and sanitary condition of the borough. The pamphlet is intended for the information of medical men who may be called upon by their patients for advice in the selection of a suitable health resort. It is a pity that our home health resorts do not receive a larger amount of patronage than is usually accorded to them. Certainly the climate of Hastings offers advantages to certain classes of invalids, abundance of sunshine and the relative absence of fog being two of the chief features. The pamphlet, which contains in a brief compass some very useful and interesting information, is illustrated by several reproductions of photographs of Hastings and St. Leonards.

THE REMOVAL OF CERUMEN FROM THE EXTERNAL AUDITORY CANAL.

To the Editors of THE LANCET.

SIRS,—I should like, through the medium of your widely-read paper, to bring before the notice of the medical profession a method I have lately adopted as a preliminary to syringing in the removal of accumulations of cerumen in the external auditory canal. With the head on one side and the external auditory meatus looking directly upwards I insert an ear speculum and through it pour six or eight drops of ether. This is allowed to remain about a minute, at the end of which time the softened wax is easily removed by the syringe. The presence of cerumen should always be determined before dropping in the ether, as it is liable to cause pain if it falls directly on the tympanic membrane.

While disclaiming any originality for this idea, I find it is not generally known, and its use will save the patient both time and discomfort. I am, Sirs, yours faithfully,

AUSTIN L. BADCOCK, M.B., B.S. Lond.,
Late House Surgeon, Brighton and Sussex Throat
Brighton, Jan. 21st, 1907. and Ear Hospital.

ACIDITY OF THE URINE.

To the Editors of THE LANCET.

SIRS,—Can you inform me as to the technique, lately introduced by M. H. Joulie, of estimating the acidity of the urine by means of saccharate of lime? I am, Sirs, yours faithfully,

Denmark-hill, S.E., Jan. 28th, 1907. FRANK A. WATKINS.

*** Our correspondent will find a note on the matter in THE LANCET of Nov. 17th, 1906, p. 1331. The title of M. Joulie's paper is "The Acidity of the Urine," by M. H. Joulie. Translated from the French by A. X. Stavros. London: John Bale, Sons, and Danielsson.

NOVOCAINE.

To the Editors of THE LANCET.

SIRS,—I notice an inquiry in THE LANCET of Jan. 19th, p. 203, and venture to give you my opinion on the matter.

Novocaine is mentioned in the "Extra Pharmacopœia" as having dosage one-fifth to one grain. I am of the opinion that from one-fifth to a half grain would be quite suitable for dental use. I understand from the manufacturers that they direct one of the Novocaine tablets to be dissolved, and three-quarters of the solution thus made to be injected outside and one quarter inside for the extraction of two teeth.

May I draw your attention to the dental anæsthetic which I have prepared for some time past and which has been used with universal satisfaction. It contains 1 per cent. of cocaine together with hæmostatics. In the ordinary way dosage may be from five to 30 minims into the gum. More than half a grain of cocaine is considered inadvisable in dental work. I am, Sirs, yours faithfully,

London, W., Jan. 19th, 1907. W. H. MARTINDALE.

SILK-FLANNEL.

WE have received from Mr. G. Martinon of 37 and 38, Gutter-lane, London, E.C., a specimen of underwear material called by him silk-flannel. Both microscopical and chemical examination confirms the statement that the fabric consists mostly of silk with a small quantity of cotton. The special feature of the fabric is that the silk is "plushed" or raised on the inside surface, so that a soft downy material is in contact with the skin, which makes the garment most comfortable to wear. There can be no doubt also of the non-conducting qualities or "warmth" of the material. Moreover, it is quite free from any irritating effects and serves as an excellent means of protection for the skin and keeps the body warm and free from damp. The material is of course distinctly absorbent while it permits of ventilation taking place freely. It is especially well adapted as a material for night garments. The manufacturer, M. Guerry-Duperay, of Roanne, France, calls the fabric "flanelle de soie."

THE BRITISH COTTAGE HOSPITAL, ALGIERS.

To the Editors of THE LANCET.

SIRS,—In answer to many inquiries from England I should be grateful if you will allow me to state in your columns that the British Cottage Hospital at Algiers has appointed as its medical officer Dr. Vivian Dangerfield who has been attached to the British Consulate at Réunion. I am Sirs, yours faithfully,

EDWYN ARKWRIGHT,
Jan. 18th, 1907. President of the British Cottage Hospital.

Assistant.—The question has two aspects. With regard to the legal one, if our correspondent's principal has sold his practice subject to all the conditions under which he was himself practising the bond holds good for his successor in all probability, but the matter is one upon which a solicitor might be consulted. 2. We do not think that it is in accordance with the principles governing the association of medical men that the assistant should cherish the intention if the opportunity presents itself to set up in opposition to his principal.

Sidmouth.—Our correspondent will find details of Bier's method in THE LANCET of May 27th, 1905, p. 1455; Feb. 17th, 1906, p. 451; and May 26th, 1906, p. 1491.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (4th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (2 P.M.), St. Mark's (2.30 P.M.).

TUESDAY (5th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (2 P.M., Ophthalmic, 2.15 P.M.), Tottenham (2.30 P.M.).

WEDNESDAY (6th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.), Children, Gt. Ormond-street (9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.).

THURSDAY (7th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (2.30 P.M.), Tottenham (Gynæcological, 2.30 P.M.).

FRIDAY (8th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), Tottenham (2.30 P.M.).

SATURDAY (9th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9.30 A.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

SOCIETIES.

MONDAY (4th).—MEDICAL SOCIETY OF LONDON (11, Chandos-street, Cavendish-square, W.).—9 P.M.: Lettsomian Lecture:—Dr. C. Beevor: The Diagnosis and Localisation of Cerebral Tumours.

TUESDAY (5th).—PATHOLOGICAL SOCIETY OF LONDON (Lister Institute, Chelsea).—5 P.M.: Meeting.

WEDNESDAY (6th).—OBSTETRICAL SOCIETY OF LONDON (20, Hanover-square, W.).—8 P.M.: Annual Meeting. Specimens will be shown by Mr. J. Bland-Sutton, Mrs. Boyd, Mr. Doran (for the late Dr. G. B. Ferguson), and Dr. Tate. Annual Address: The President (Dr. Daxin).

THURSDAY (7th).—NORTH-EAST LONDON CLINICAL SOCIETY (Tottenham Hospital, N.).—4 P.M.: Discussion on the Sequelæ of Influenza (opened by Dr. M. Leslie).

FRIDAY (8th).—WIMBLEDON AND DISTRICT MEDICAL SOCIETY (Worple Hall, Worple-road, Wimbledon).—9 P.M.: Paper:—Mr. R. Johnson: Acute Bone Suppurations in Children.

CLINICAL SOCIETY OF LONDON (20, Hanover-square, W.).—8.30 P.M.: Papers:—Dr. F. Hawkins: A Case of Typhoid Fever, with Acute Pneumonia, Pericarditis, and Hæmorrhagic Pleural Effusion.—Mr. J. R. Lunn and Dr. G. Holmes: Clinical and Post-mortem Notes of a Case of General Paralysis of the Insane in a Boy.—Dr. M. Fletcher and Mr. B. Robinson: Further Report on a Case of Idiopathic Dilatation of the Colon.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MONDAY (4th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Dr. A. Whitfield: Clinique. (Skin.) 5.15 P.M.: Lecture:—Dr. T. J. Horder: Neurasthenia, a Further Criticism.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—12 noon: Pathological Demonstration:—Dr. Low. 2 P.M.: Medical and Surgical Clinics. 2.30 P.M.: Operations. Skiagraphy. Mr. Dunn: Diseases of the Eye. 5 P.M.: Clinical Lecture:—Dr. Saunders.

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—9.30 A.M.: Clinique:—Surgical Out-patient (Mr. H. Evans). 2.30 P.M.: Cliniques: Medical Out-patient (Dr. Whipham), Throat, Nose, and Ear (Mr. Carson); X Ray Demonstration (Dr. Pirie).

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.30 P.M.: Operations. 2.30 P.M.: Sir D. Duckworth: Medicine. 3.15 P.M.: Mr. W. Turner: Surgery. 4 P.M.: Dr. St. Clair Thomson: Diseases of the Throat, Nose, and Ear. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 12 noon: Ear and Throat.

TUESDAY (5th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Dr. J. W. Carr: Clinique. (Medical.) 5.15 P.M.: Lecture:—Mr. E. T. Collins: Physiological Appearances of the Fundus Oculi.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—10 A.M.: Dr. Moullin: Gynæcological. 2 P.M.: Medical and Surgical Clinics. Dr. Ball: Diseases of the Throat, Nose, and Ear. 2.30 P.M.: Operations. Skiagraphy. Dr. Abraham: Diseases of the Skin. 5 P.M.: Clinical Lecture:—Mr. Dunn.

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—10.30 A.M.: Clinique:—Medical Out-patient (Dr. Auld). 2.30 P.M.: Surgical Operations (Mr. Carson); Cliniques: Gynæcological Out-patient (Dr. Giles), Surgical Out-patient (Mr. Edmunds).

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.30 P.M.: Operations. 2.30 P.M.: Dr. R. T. Hewlett: Medicine. 3.15 P.M.: Mr. Carless: Surgery. 4 P.M.: Mr. M. Morris: Diseases of the Skin. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 12 noon: Skin. 3.15 P.M.: Special Lecture:—Mr. Carless: Some Injuries about the Elbow.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC (Queen-square, Bloomsbury, W.C.).—3.30 P.M.: Clinical Lecture:—Dr. J. Taylor: Epilepsy.

CHARING CROSS HOSPITAL.—4 P.M.: Demonstration:—Dr. I. Bruce: (Electrical). (Post-Graduate Course.)

WEDNESDAY (6th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Mr. J. Pardoe: Clinique. (Surgical.) 5.15 P.M.: Lecture:—Dr. E. Cautley: Constipation in Infancy and Childhood.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—10 A.M.: Dr. Ball: Diseases of the Throat, Nose, and Ear. Dr. Saunders: Diseases of Children. 2 P.M.: Medical and Surgical Clinics. 2.30 P.M.: Operations. Skiagraphy. 5 P.M.: Dr. Beddard: Practical Medicine.

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—2.30 P.M.: Cliniques:—Dermatological (Dr. Meachen), Ophthalmological (Mr. Brooks), Medical Out-patient (Dr. Whipham). 4.30 P.M.: Lecture:—Mr. R. P. Brooks: Ocular Headaches.

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.30 P.M.: Operations. 2.30 P.M.: Dr. R. Wells: Medicine. 3.30 P.M.: Mr. Cargill: Ophthalmology. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 11 A.M.: Eye.

CENTRAL LONDON THROAT AND EAR HOSPITAL (Gray's Inn-road, W.C.).—5 P.M.: Demonstration:—Dr. A. Wylie: Pharynx.

THURSDAY (7th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Mr. Hutchinson: Clinique. (Surgical.) 5.15 P.M.: Lecture:—Dr. F. J. Smith: Some New Ideas on the Old Subject of Indigestion.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—2 P.M.: Medical and Surgical Clinics. 2.30 P.M.: Operations. Skiagraphy. Mr. Dunn: Diseases of the Eye. 5 P.M.: Lecture:—Mr. Baldwin: Practical Surgery.

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—2.30 P.M.: Gynæcological Operations (Dr. Giles). Cliniques:—Medical (Dr. Whiting), Surgical Out-patient (Mr. Carson). 3 P.M.: Clinique:—Medical In-patient (Dr. Chappel)

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.30 P.M.: Operations. 2.30 P.M.: Dr. G. Rankin: Medicine. 3.15 P.M.: Sir W. Bennett: Surgery. 4 P.M.: Dr. H. Cooper: Radiography. Out patient Demonstrations:—10 A.M.: Surgical and Medical. 12 noon: Ear and Throat.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN (Leicester-square, W.C.).—6 P.M.: Chesterfield Lecture:—Dr. M. Dockrell: Syphilis as it modifies other Eruptions of the Skin: Symptoms, Diagnosis, and Treatment.

CHARING CROSS HOSPITAL.—4 P.M.: Dr. Galloway: Demonstration (Medical). (Post-Graduate Course.)

HOSPITAL FOR SICK CHILDREN (Gt. Ormond-street, W.C.).—4 P.M.: Lecture:—Dr. Batten: Cerebellar Tumours.

FRIDAY (8th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Dr. J. Horne: Clinique. (Throat.)

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—10 A.M.: Dr. Moullin: Gynæcological. 2 P.M.: Medical and Surgical Clinics. Dr. Ball: Diseases of the Throat, Nose, and Ear. 2.30 P.M.: Operations. Skiagraphy. Dr. Abraham: Diseases of the Skin. 5 P.M.: Lecture:—Dr. Abraham: Cases of Skin Disease.

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—9.30 A.M.: Clinique:—Surgical Out-patient (Mr. H. Evans). 2.30 P.M.: Surgical Operations (Mr. Edmunds). Cliniques:—Medical Out-patient (Dr. Auld), Ophthalmological (Mr. Brooks). 3 P.M.: Clinique:—Medical In-patient (Dr. Leslie).

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.30 P.M.: Operations. 2.30 P.M.: Dr. R. Bradford: Medicine. 3.15 P.M.: Mr. McGavin: Surgery. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 12 noon: Skin. 2.15 P.M.: Special Lecture:—Dr. R. Bradford: Thoracic Aneurism.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC (Queen-square, Bloomsbury, W.C.).—3.30 P.M.: Clinical Lecture:—Dr. J. Taylor: Optic Nerve Changes in Nervous Diseases.

SATURDAY (9th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—10 A.M.: Dr. Ball: Diseases of the Throat, Nose, and Ear. 2 P.M.: Medical and Surgical Clinics. 2.30 P.M.: Operations. Skiagraphy.

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich.)—2.30 P.M.: Operations. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 11 A.M.: Eye.

During the week marked copies of the following newspapers have been received: *Scarborough Evening News, Bedford Standard, Cornish Times, Westminster Gazette, Liverpool Post, Manchester Guardian, Staffordshire Sentinel, Dublin Telegraph Manchester Dispatch, Brighton Evening Argus, Manchester Weekly Times, Glasgow Herald, Australasian Medical Gazette, Leeds Mercury, &c.*

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index and Title-page to Vol. II. of 1906, which was completed with the issue of Dec. 29th, were given in THE LANCET of Jan. 5th, 1907.

VOLUMES AND CASES.

VOLUMES for the second half of the year 1906 are now ready. Bound in cloth, gilt lettered, price 18*s.*, carriage extra.

Cases for binding the half year's numbers are also ready. Cloth, gilt lettered, price 2*s.*, by post 2*s.* 3*d.*

To be obtained on application to the Manager, accompanied by remittance.

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WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

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METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Jan. 31st, 1907.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Polar Radia in Vacuo	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Jan. 25	30·452	E.	...	35	35	25	...	28	Overcast
,, 26	30·420	N.E.	...	65	34	28	...	31	Cloudy
,, 27	30·440	W.	...	42	41	27	...	32	Overcast
,, 28	30·024	W.	0·08	56	51	32	41	41	Overcast
,, 29	29·622	W.	0·04	71	45	39	37	39	Fine
,, 30	29·640	N.	...	65	43	36	37	40	Cloudy
,, 31	30·034	N.E.	...	66	38	32	...	33	Fine

Communications, Letters, &c., have been received from—

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